Planning for a New Mobility Future

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What Does the Mobility Future Look Like?

• Probably more questions, than answers…
(Some) “Levers” Impacting the Future Mobility Ecosystem

• The Mobility Reset
• Implications of Increased Call for Electric Vehicles
• Inequities (Among Disenfranchised Neighborhoods)
• New/Micro-Mobility
• Goods Movement (and E-commerce Rise)
• Technologies (particularly around Goods Movement)

• Some Final Thoughts
The Mobility Reset (and Rethink)

• Nearly everyone rethinking (all) their travel (and their lives?)
• Where (and how) we work?
• How and where do we live and recreate (and medical, etc.)?
• How will travel patterns and modal choice change for different neighborhoods and environments (not everyone can order online and/or work from home)

• Bottom line - How will we travel? And when and where? And how will goods movement “follow us” with products and services?
Increased Call for Electric Vehicles (EVs)

• Will it be the same as everyone turning on their washer and dryer at the same time every night?
• What are the implications on national and state grid networks?
• While EVs may not be emitting harmful gases or vapors – this electricity may spawn from coal, nuclear or natural gas
Inequities of EVs

• Inequities among disenfranchised neighborhoods are perpetuated by the push for EVs

• Unable to afford the vehicles…therefore left out of the advanced safety benefits and atmospheric enhancements brought to the physical community

• We should study patterns of movement in disenfranchised cities (e.g., through mobile phone data) and focus on long-term, sustained planning contact to thwart mobility gentrification
Inequities in Transportation

• Highway construction and displacement
• Inequitable investment in rail & bus transit systems
• Representation of suburban vs. urban within Metropolitan Planning Organization (MPO) structures
• Use of Level of Service to justify road widening
• Disproportionate investment & fund prioritization
New/Micro-Mobility Questions

• Will it become more common to see small vehicles for short trips in dense environments; if so….
  • What impact on environment and neighborhood livability characteristics?
  • Does it take larger vehicles off the road (for convenience, goods delivery), or does it increase vehicles per household?
  • Time will tell in this realm especially as more intensive analyses of land use impacts develop in a post-COVID world
Goods Movement: The E-commerce Growth Facts

“More than 10 years ago, e-commerce accounted for 5.1% of total U.S. retail purchases. On-line sales now account for 21% (2020), a striking jump from 16% in 2019.”

“Consumers spent $861B on-line in the U.S. in 2020, up an incredible 44% compared with 2019. That’s the highest annual U.S. e-commerce growth in two decades.”

Source: www.digitalcommerce360.com
....and What about Business-to-Business (B2B) E-commerce?

“B2B e-commerce, when compared to B2C (business-to-consumer), is projected to be two times bigger than B2C in 2020. In fact, it’s anticipated to be the area of largest e-commerce growth from 2020 to 2025.”

Source: www.forbes.com

“B2B e-commerce sites (and e-procurement sales) grew by nearly 12% in 2020 (from 2019) to $2.19T.” [2.5 times B2C]

“B2B digital sales channels – including e-procurement, electronic data interchange (EDI) and other channels in addition to e-commerce sites – increased by nearly 10% to 9.9T in 2020 from 9.1T in 2019”

Source: www.digitalcommerce360.com
Private-sector Demands/Solutions

- Carriers (and shippers) must make their delivery windows!
- “Next-day delivery” or “same day delivery” means must get product closer to customers before they click “add to cart” and “purchase now”
  - Warehouse and/or distribution centers closer to customers
  - Inventory – how much? Where?
- More trucks to “make their turns”
- Need access to the curb
- Technological solutions

Source: https://reporterdoor.com
What are the Environmental Impacts of Next-day Deliveries?

• Packaging waste (boxes, plastic wrap, etc.)
  • 165B packages shipped (~2017), “with the cardboard used equating to more than 1B trees.”

• Meal-kits leader Blue Apron: “…sends out 8 million meals a month, each containing 2, 6-pound ice packs. The freezer pack waste is about 192,000 tons per year, or ‘the weight of nearly 100,000 cars or 2 million adult men.’”

• “A sea of packaging waste, and too much ending up in our oceans. By the year 2025, there will be a metric ton of plastic for every 3 metric tonnes of fish (UN says by 2050 there will be more plastic waste than fish).”

Source: www.forbes.com
What are (Some of) the Implications of Delivery Demands?

- Goods must arrive in perfect condition
- “Average box is dropped 17 times”
  - Large box with air bags
  - We’re shipping air
- Responsible packaging is a growing area
  - Reusable containers, etc.
- Some brands trying to get customers back into stores
- Reverse logistics
  - Returns, reselling, repairs, repackaging and recycling

Source: www.forbes.com
ANAMA Package and Testing
A glimpse into the future?

An underwater warehouse

A floating airship, or a blimp

Some Amazon Patents

Source: www.businessinsider.com
Amazon Patents – a glimpse into the future?

“Multi-level fulfillment center for unmanned aerial vehicles”

Some Amazon Patents

Source: www.businessinsider.com
Amazon Patents – a glimpse into the future?

Some Amazon Patents

Source: www.businessinsider.com
Technological Solutions are Coming Here

• Delivery robots
• Autonomous vehicles – implemented in freight delivery, long-haul being successfully tested too
• “Space-age” deliveries

• What about technology xx?...

• …if it reliably and safely helps companies hit delivery windows, it will be in the running. (And this is true across the global supply chain – trucks, drones, short-haul flights, vessels, last-mile, etc.)

• How do we equitably plan our transportation systems for this? (energy needs, maintaining a healthy environment; land use, city planning implications, building code impacts, etc.)
Getting to Sustainable Mobility Solutions Will Require More…

• Conversations
• Options
• Modes
• Patience
• Empathy
• Equity
• Data

Source: Robert Fulghum, “All I Really Need to Know I Learned in Kindergarten”
Many Stakeholders

• Several stakeholders involved (and responsible) as we (all) plan for the future
  • Public agencies (federal, state and local)
  • Private companies (businesses, shippers, carriers, technology, original equipment manufacturers (OEMs), etc.)
  • Non-profits
  • Consumers and customers (and general public)
  • ....and anyone else who ever travels, or ever eats or buys anything
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• Transportation Research Board, Urban Freight Transportation Committee
  • http://urbanfreight.tti.tamu.edu
  • “Urban Freight Transportation Committee Centennial Paper: Embracing the Future with Insights from the Past”

Contact me….Let’s continue the conversation!