City of Cambridge
NEW MOBILITY BLUEPRINT
Advisory Group Meeting 3 Breakout Session Comments
January 23, 2020

Attendees: Bruce Kaplan, Kathryn Carlson, James Cater, Chris Tassone, David Block-Schachter, David Keith, Jane Gould, Megan Aki, Melissa Chan, Ray Hayhurst, Roy Russell, Stephen Russell, Will Dickson, Yonah Freemark, Zef Vataj, Staff: Stephanie Groll, Bronwyn Cooke, Susanne Rasmussen, Brooke McKenna.

Advisory Group members participated in a facilitated brainstorm exercise. There were six discussion topics total, and every member rotated through three topics. Below is a summary of brainstorm comments and questions that Advisory Group members discussed in each topic. The groups' wide-ranging discussions did not address all subcategories, so some subcategories will be blank.

Abbreviations found in this document:
AV—Autonomous Vehicle
EV—Electric Vehicle
GHG—Greenhouse gas emissions
RHV—Ride-hail vehicle

Micromobility

GHG & Resiliency

Opportunities

- If you own your own vehicle, it's more resilient because you are less dependent on external transportation systems

Challenges

- Vehicles dependent on the grid and roads to work, which leaves the system vulnerable during disasters (or natural events like snowstorms)
- Crowding on sidewalks becomes an issue during emergency response
- Is city responsible for clearing sidewalks when this system is in place?

Tradeoffs

Policy

- Pair charging hubs with battery storage
- Fleets not available during winter
- Ensure operator uses clean energy sources or offsets their energy consumption in some way
- Incentive to use micromobility in a way that reduced GHG emissions
- Proper disposal and recycling of batteries and vehicles
- Require longer lasting batteries that can stand up to the cold weather

- Ensure the vehicle that distributes the fleet around the city uses clean energy or is an emissions-less vehicle
- Micromobility (especially narrow tire scooters) are dependent on smooth roadway surfaces – this may require higher level of pavement maintenance funding

Managing Traffic Congestion

Opportunities

Challenges

Tradeoffs

- Scooters aren't necessarily pulling people out of cars but could be cannibalizing Cambridge's beneficial mass transit users
- Depending on how infrastructure rolls out, micromobility could make roads more congested
- Micromobility will land in bike lanes, increasing congestion

Policy

- E-bike/scooter companies are consolidating, so how many will be left?
- Dedicate on-street areas to park device (e.g. look at DC example)
- Cluster charging stations for all modes together, including car parking – ie a Mobility Hub
- Reduce the effective width of the roads to create more lanes for micromobility (e.g. Longfellow bridge)
- Dedicating certain lanes or others (e.g. inner lanes) to certain forms of mobility
- App companies can nudge riders to park in good places or rate other users poor park jobs
- Locate stations at major transit and employment locations, make micromobility visible

Equitable access

Opportunities

- Connect riders to all different activities
- Big benefit for economic activity
- Shared fleets, people don't need to own their own (potentially)

Challenges

- Making the assumption that micromobility meets needs of all riders
- Don't assume that this tech is only scooters and e-bikes, but over time this technology will evolve and could be more accessible
- Current vehicles (besides cargo bikes) can't carry packages and families
- Fleets could become unbalanced and some people cannot access them
- Fleets could disappear due to rapidly contracting # of operators. This has left some municipalities and their residents without shared micromobility options.
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Tradeoffs

- Affordability and induced demand are inherently linked – if it's affordable people will do more of it.

- Do we exclude people from accessing micromobility if we don't allow riding on sidewalks (e.g. exclude people who are uncomfortable riding on roads)

Policy

- Requirements for micromobility companies to provide certain services to make it more accessible, like vending machine for helmets, basket for groceries
- Hire local community members to work for companies
- Low income, veteran and elderly subsidies (either through city or private companies)
- City provides a subsidy to low income riders at local businesses (e.g. if you ride your e-bike to the local bookstore you get 10% off)
- Policy to help people without bank accounts or access to credit or cell phones have access to micromobility options
- Explore different vehicle types (e.g. Portland has tricycles)
- Cambridge offers regular bike trainings and could add in scooter trainings and target groups that typically struggle with low accessibility
- Micromobility ambassador to conduct direct outreach with communities on how to use fleets (ex. Boston Bikes ambassador program)
- Subsidize fleet operators (ex. City's current subsidy to Motivate d/b/a Blue Bikes)
- Direct subsidies to individuals to purchase micromobility devices - either a rebate, credit, or "mobility wallet"

Safety & Wellness

Opportunities

Challenges

- Head injuries & first-time riders
- Do we want people able to ride on sidewalks that don't feel comfortable riding on roads?
- People might ride a scooter down the block, where they would have otherwise walked

Tradeoffs

Policy

- Restricting nightime operations for fleets
- How do we manage tourists? They don't have helmets and don't know the roads
- Micromobility vehicle safety training offered
- Offer licensing/certification
- Aligning city policies in neighboring jurisdictions
- Limit speed (12-15mph for bikes?)
- Fleet provider has to provide helmets
- Differentiate between bike rules for helmets and scooter rules…everyone should have to wear helmets on a scooter – how do we enforce this? Would we want to enforce this?
- Geofence the fleets to stay off certain, busy streets
- Require Individual rider insurance – how do we enforce this? Would we want to enforce this?

- Scooters with wider tires are safer – mandate scooter companies provide more safe versions of vehicles
- Mandate that the private sector furthers safety initiatives
- Safety training in empty parking lots
- Mirror the bike policy for helmets

Automated Vehicles

GHG & Resiliency

Opportunities

- Centralized charging for improved utilities efficiency.

Challenges

- *Empty cruising AVs could increase VMT leading to increased GHG*

Tradeoffs

Policy

- Policy should mandate no short trips

Managing Traffic Congestion

Opportunities

- Personally owned AVs could exacerbate current issues posed by cars and ridehail vehicles
- Opportunity for first-mile/last-mile services
- Public AV shuttles at an affordable cost, increased transit access
- Opportunity to codify access. For example, the City could choose to make certain blocks inaccessible to cars, or certain areas off limits to anything but AVs, or at certain times of day in select areas.
- Dynamic routing, with input/regulation from city
- Fewer bad drivers
- Opportunity to reimagine cars as guests, as opposed to the primary users of roadways

Challenges

- Empty, cruising AVs could increase VMT and traffic congestion
- AVs might compete with transit for ridership
- What's the real difference between AVs and RHVs – how will AVs substantially differ as a service?
- Are we assuming too much promise from AV technology?
- AVs will change the manner in which goods are moved
- Unlimited concierge could induce demand and create struggles for storefront retail
- If AV's are affordable, people will use them more, increasing VMT.

Tradeoffs

- Centralized traffic source if charging is centralized, could be especially hectic during rush hour

Policy

- Guide dynamic routing on primary, secondary and tertiary streets
- Time to impose cost on curbside usage.
- Policy should mandate minimum occupancy requirements, no empty AV driving and trip-matching.
- City could consider different taxing methods for fleets versus personal AV ownership
- Could impose fee for personally owned AVs

- Geofence certain neighborhoods for just AVs
- Require that AVs are electric and shared
- Set up system for dynamic right-of-way and access, for different areas across the day.
- Zero-occupancy vehicles should be priced/fined
- City should learn from RHV best practices and apply to AVs, including for pick up and drop off areas.
- City should bring together all users (goods/people/etc.) of movement on the same platform for higher AV utilization and less VMT/congestion
- There should be peak period policies to protect pedestrians
- City should exercise more control over the curb
- Curb access should be enforced
- Off-street parking should be taxed and permitted
- Use RHV best practices toolkit, for pickup/drop offs especially.
- Upgrade the grid for better charging.
- Is Transportation Oriented Design truly better in an AV future? The City should consider.
- The City should adopt a zero occupancy miles policy

Equitable Access

Opportunities

- Centralized charging for improved utilities efficiency. Maybe there's a benefit for the local population around the charging site? Jobs? Improved service?
- Improved bus services
- Concierge services
- AV opens up mobility for populations that can't drive

Challenges

- Where do AVs go to charge? Where is their base? How is the community around that base affected?
- Parking and charging structures for AVs might move to lower income neighborhoods.

Tradeoffs

- AV in logistics/freight might further the downtown crisis of empty storefronts and retail because goods will come to you.

Policy

- Algorithms should focus on people and pedestrian movement, not AV/vehicle efficiency. (Pedestrians in an intersection should have full right of way, rather than focus on AV efficiency there)
- Any neighborhood benefits for having a fleet facility in your neighborhood?

Safety & Wellness

Opportunities

- Opportunities for parks and new business in space that used to be dedicated to driving or parking.
- With less parking necessary, maybe an opportunity for denser development?
- Opportunity to re-imagine the physical layout of the street towards community centric designs, like spaces for children to play
- Opportunity to re-design for improved access
- Improved vehicle safety – minimizes driver/operator control and errors
- Reduced travel cost, less pressure to gentrify
- Safety concerns will be less of a problem by the time AVs show up and scale in Cambridge
- The market is incentivized to operate safely and smoothly
- Opportunity for passenger-less freight of vital goods (medical, food, etc.)

Challenges

- People who currently work as drivers might lose their jobs during transition
- *AV operations in poor weather conditions (where markings, signage, and general operating environment may be unrecognizable)*
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Tradeoffs

Policy

- Policy should mandate Operator requirements

Electrification

GHG & Resiliency

Opportunities

- Note – electrification of all modes (trains, buses, trucks)
- Primary lens is GHG
- EV might improve stability of the grid
- Electrification supporting energy independence
- A charging depot battery could support Vehicle-to-grid and vehicle-to-bike
- Resiliency
- EV – wind, solar
- More wholistic view of supply
- Managed charge
- Marketplace for EV support

Challenges

- Taxis and Ubers: taxis were required to use lower emission vehicles, then Uber came along. How can we get some requirements?
- Challenge to resiliency if we aren't resilient on electrification

Tradeoffs

- Short-term increase in electricity demand or over incentivizing

Policy

- Biggest impact -> shared, which is a policy opportunity
- Can City encourage electrification of shuttles? (Harvard/MIT/Kendall Square)
- How can City help those who can't convert vehicles yet?
- Market segment – outreach why do you have a car?
- Once you get a substation permitted what else can be done at that site? In terms of supporting transition to EV
- Toll/price roads to incentivize EVs where trips still needed
- City policy about muni fleet
- EV parking and no fee permit for EVs
- Roads only for EVs? EV hubs and/or EV corridors?
- How much control can city leverage to encourage?
- Boston EV ready policy – is this right for Cambridge?
- How to encourage night charging?

Managing Traffic Congestion

Opportunities

- Businesses local delivery – e-bikes, cargo, RHV
- Delivery Apps – use apps as framework to encourage electrification
- Electric carshare – large buildings required to dedicate some # of spaces to car share (could be EV)

Challenges

- MBTA – how can the city support bus electrification works on the routes entirely within the City? Can the City buy the buses for use on those routes?
- Incentive to drive more if you think it's guilt free and lower emissions

Tradeoffs

- Car share not interested in infrastructure ownership looking for underutilized stations
- In terms of traffic congestion – does this help?
- EV reduce # of vehicles

Policy

- When changing delivery models or rules be aware of encouraging lower emissions
- Opportunity to regulate deliveries
- Harvard observatory *inventory all parking to find optimal siting
- Maximizing use of existing EVSE
- Parking/charging policy + siting to support the kind of charging we want to see
- Model from Bluebikes? Such as Zipcar
- Uber/Lyft How to encourage EV
- Buying T Buses – can city encourage electrification?
- RHV: set goals for EV conversion
- Discourage SOV & personal ownership -> promote sharing
- More significant infrastructure to supply the demand supported by substations
- Encourage at-night charging always, unless daytime from solar + wind is cleaner
- If you do have off street parking, make it easier – streamline permitting – make at home off-street EVSE permitting better

Equitable Access

Opportunities

- Speed -> Electrified bike or scooter can get there faster
- Equity opportunity – lower cost per mile (across all modes)

Challenges

- Ensure equitable access to charging stations
- Negative impact of batteries on environment
- Education challenges RE Charging
- Electrification as equity issue
- Equity of electrification beyond Cambridge borders – pushing pollution to generation sites
- Cost of EV—the toys of rich people
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Tradeoffs

- Does electrification provide monetary savings for the MBTA and expand service?
- Allowing/providing programs that let wealthy people pay for their own – equity trade off

Policy

- Public school lots – nighttime charging
- Understanding the technology, signage and dynamics. Understandable electric bills.
- City should provide help with understanding

- City subsidies to private parking operators (with chargers) to allow public to use EV chargers

Safety & Wellness
Opportunities

Challenges

Tradeoffs

Policy

Sidewalk Delivery and Drones

GHG & Resiliency

Opportunities

- Reduce truck VMT
- Easier goods deployment (e.g., emergency supplies)
- Build concentrated areas for distribution centers, and deploy from there to minimize footprint
- All electric systems with lighter footprint

Challenges

- Recharging devices and energy consumption

Tradeoffs

- Induced demand (more orders, less cars)
- Different packaging based on service type and area
- Regulation at air space at federal/State level, limited at city level (e.g., near schools)

Policy

- Regulate type of packaging to encourage re-use
- Comprehensive ban on large delivery vehicles

Managing Traffic Congestion

Opportunities

- Could reduce deliveries made by car
- Smaller vehicle footprint if using cargo bikes, etc.
- Smaller footprint then vehicles

Challenges

- Robots might crowd streets, sidewalks, and the skies to drop off packages
- Uneven sidewalks
- Overhead utilities
- Limited capacity on sidewalk (lack of space)
- Increased conflicts
- Robots stuck at intersections
- Fine with only a few deliveries but difficult if the number of deliveries vastly increases

Tradeoffs

- Potential for fewer delivery vehicles but could mean more smaller delivery pods on streets/sidewalks

Policy

- Drones only allowed to go to specific locations or distribution centers and not city streets
- Time-based restrictions
- Regulate frequency of deliveries and time of day, etc.
- Pilot program on a campus to set goals/expectations/outcomes
- City to maintain sidewalk space and modify policies for sidewalk delivery devices
- Regulate frequency of deliveries and time of day, etc.

Equitable Access

Opportunities

- Might offer benefits in delivery speed and reduced cost for critical items such as medicines

Challenges

- Impact to delivery labor could be significant if those jobs are not transitioned into another related role such as robotic maintenance
- Cost of goods and deliveries may go either up or down depending on systems and markets
- Difficult to define the market/area of service
- Impact to commerce
- Where will they be deployed? (in new developments or in established parts of the city?)

Tradeoffs

- Identify pilot area (e.g., Self-contained areas, such as campus, vs. citywide areas for deployment)
- Sidewalk robots could help people with mobility and navigation challenges by providing delivery options but could impact their ability to freely move in sidewalks
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Policy

- Define specific service offered
- Surcharge pricing and how will taxes for services be regulated
- Manage weight restrictions (set minimum/maximum weight)
- Manage convenience and access of service
- Regulate what can and cannot be delivered
- Data sharing requirements re: service issues, types of deliveries, origin-destination, geo-fencing, etc.

Safety & Wellness

Opportunities

- More exercise for delivery personnel
- Overcome food deserts

Challenges

- The noise pollution caused by aerial drones will be difficult to limit
- Hacking personal information

- Malfunctions (e.g., dropping items on people)
- Major privacy issues—hovering near windows, more?
- Potential conflicts with other future street/aerial users
- Visual clutter

Tradeoffs

- Less activity and economic potential
- Reduced sales tax implications
- Does this support local business or threaten

Policy

- Need policy that regulates the purpose and use of services (e.g., FAA)
- Need policy that regulates the new network traffic
- Need policy that addresses personal security and safety issues
- Need policy that addresses public security and safety issues

Ride-hail vehicles (RHV) and Carshare

GHG & Resiliency

Opportunities

Challenges

Tradeoffs

Policy

- Create incentives for transit usage for intra-Cambridge trips
- Create a mandate for GHG targets/electrification for RHVs
- Create more convenient charging stations for RHVs
- Create car-light/car-free incentives for new residents
- Set occupancy benchmarks for RHVs (as well as private vehicles)
- Create a policy for certain rides to be shared (define which rides)

Managing Traffic Congestion

Opportunities

Challenges

Tradeoffs

- Government could provide pricing incentives to encourage more pool RHV rides (e.g. Chicago), but pooled rides should not be encouraged over transit

Policy

- Pick-up/drop-off activity needs to be managed at high-volume locations
- City needs to regulate the curb—who uses it, when, and at what price
- City could sell the curb space
- Dynamic curb cost; based upon most productive, greatest # of people served (E.g. Bus, TNC, SOV)
- Create Mobility Data Specifications (via Open Mobility Foundation) for RHVs
- Create a policy for certain rides to be shared (define which rides)

Equitable Access

Opportunities

- RHVs could help supplement paratransit trips
- Develop a better understanding of equity issues. More analysis needs to be done in general.
- Identify an ADA strategy

Challenges

- Not all RHVs are wheelchair accessible

- Apps are not necessarily accessible to people with navigational challenges

Tradeoffs

Policy

- Lower the barrier to entry for carshare
- Open new carshare spaces or allow for flexibility to park in any public space
- Provide additional permits/vehicles
- Create subsidies for people with low incomes to take RHV trips to medical appts, grocery shopping
- Create a cash payment mechanism for all RHVs

Safety & Wellness

Opportunities

- RHVs have provided a great option to reduce drunk driving

Challenges

- RHV stopping to pick up /drop off in or too close to bike lanes

Tradeoffs

- Need better automated enforcement but how does it fit with City surveillance ordinance? Is automated enforcement preferred to reduce police / traffic enforcement presence?

Policy

- Enforcement for traffic, parking, and pick-up/drop-off should be automated. Especially for speed infractions.
- Develop standards for safety and cleanliness

Mobility as a Service (Also called Seamless Mobility)

GHG & Resiliency

Opportunities

- Large opportunity to reduce single occupancy vehicles
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- Promote active mobility within the MaaS operator fleets, possibly by in-app incentives

Challenges

- Do we have the right to get involved? What is the basis of our regulatory authority?

Tradeoffs

Policy

- Can this be regulated through curbside access policy
- MaaS operators may need a "discovery" period to better understand user behavior. We should not assume they will get it right the first time. The City has an opportunity to partner with MaaS operators to fine tune their fleets for the City goals while being profitable.
- Incorporate electrification requirements into the MaaS agreement
- Require net-zero benchmarks for the MaaS fleet, so that the MaaS operator would have no net or less-than-net requirements

Managing Traffic Congestion

Opportunities

- MaaS could provide people with a greater awareness of more efficient travel choices (small vehicles, more people per vehicle)
- MaaS has the opportunity to promote shared mobility and sharing of vehicles
- MaaS can promote connections to public transit
- MaaS provides shortest-possible travel times through calculated intermodal route finding…this will be its greatest benefit

Challenges

- Residents or workers may take advantage of more convenient choices (e.g., RHVs incorporated into MaaS fleets) rather than space-efficient or GHG-reducing choices
- There would be a technical/policy challenge to coordinate with MBTA
- MaaS might make more sense at the regional level, where there is more travel activity to extract efficiency in trips

Tradeoffs

- Increased resident or worker choices versus prioritization of preferred transportation modes

Policy

- Policy might be made at the level of individual modes rather than MaaS platform level
- Require occupancy minimums like NYC
- Use this as an opportunity to collect comprehensive data
- Pilots for MaaS should be pairing with other pilots to get synergies

Equitable Access

Opportunities

- There is an opportunity to subsidize MaaS and focus it on a particular area or group, such as a college campus/population. This could unlock employment opportunities
- If MaaS is regulated, there is an opportunity to increase and standardize ADA accessible vehicles
- MaaS might be an opportunity to get away from credit cards, if we can figure out some better way such as giving people credits for cash, etc

Challenges

- Language barriers might prevent non-english speakers from using MaaS platforms

Tradeoffs

Policy

- Prohibit walled gardens in order to reduce possibility of service monopoly and increase consumer choice and tool convenience.

Safety & Wellness

Opportunities

Challenges

Tradeoffs

Policy