

Memorandum

TO: Michael Walsh and Cutler Cleveland

FROM: Chris Porter and Marty Milkovits

DATE: August 20, 2018

RE: Notes from Carbon-Free Boston Transportation Advisory Group Meeting #4, August 20, 2018

Notes from meeting show in black; **project team response/follow-up in red.**

Interest in Additional Travel Demand Scenarios/Analysis

- Combined CAV-Smart Mobility
- More broad-based pricing scenarios
- Bike facility impacts crossing city boundaries
- Combined impacts
- Go beyond current policies if needed to show what we need to achieve carbon neutrality

Project team response

We are looking at the following additional travel demand scenarios:

- **State/regional carbon price**, testing the equivalent of a \$50/ton carbon price by increasing price per VMT by \$0.01, \$0.02, \$0.05.
- **Maximum pricing**, charge of \$1, \$2 or \$5/trip starting and/or ending anywhere in the city (representing a specific mechanism TBD such as a cordon charge, parking price, or other road usage fee).
- **“Maximum low-cost mobility”**, reducing bike trip impedances by 42% (starting or ending) and reducing transit travel times by 5% citywide to simulate reprioritization of road space towards separated bike lanes and transit priority (bike – transit – combined).
- **Pathway #2: Combined CAV-shared mobility**, assuming that some proportion (e.g., up to 50%) of Boston households rely primary on fleet-operated AV-EV shared mobility and reduce

their vehicle ownership; Also pricing to discourage SOV rides (+\$1/mile) and encourage shared rides (-\$1/mile cross-subsidy, -\$1/mile from AV efficiencies = -\$2/mile).

- **Pathway #3: Combined CAV-shared mobility plus maximum low-cost mobility.**
- **Pathway #4: Combined CAV-shared mobility plus maximum low-cost mobility plus maximum pricing plus Go Boston 2030 transit projects.**

Interest in Additional Outputs and Sensitivity Testing

Issue	Project Team Response
<ul style="list-style-type: none"> • Limit EV policy impact to trips produced in Boston - or at least contextualize results by degree of city influence 	<ul style="list-style-type: none"> • Will split results based on trips produced inside and outside of Boston, as well as address this issue qualitatively.
<ul style="list-style-type: none"> • Calculate revenue generated from pricing policies (potentially available to support reinvestment) 	<ul style="list-style-type: none"> • Will estimate revenue from pricing (including shared-mobility pricing).
<ul style="list-style-type: none"> • Impact of relative electricity/gasoline prices on cost savings; including higher electricity price scenario 	<ul style="list-style-type: none"> • Including different energy prices in sensitivity analysis.
<ul style="list-style-type: none"> • Show change in air pollution by neighborhood from transit electrification (bus and rail) 	<ul style="list-style-type: none"> • Do this analysis if time permits, but need to discuss specifically what comparisons we would be making.
<ul style="list-style-type: none"> • Peak vs. off-peak charging demand 	<ul style="list-style-type: none"> • Not proposing to do this, as our modeling system gives us little information that is helpful to the analysis. We can provide some input data, such as how many vehicle-trips are attracted to Boston neighborhoods in the peak period.
<ul style="list-style-type: none"> • VMT change by neighborhoods passed through (not just origin and destination) 	<ul style="list-style-type: none"> • Current model structure does not support this.
<ul style="list-style-type: none"> • Maps and tables expand to include VMT changes in neighboring towns 	<ul style="list-style-type: none"> • Current reporting provides VMT and other changes by “ring” (Boston, neighboring towns, inside 95, inside 495, other).

Comments on Key Assumptions

Issue	Project Team Response
<ul style="list-style-type: none"> Cap EV market based on % of population with potential access to home charging (see MAPC “garage orphans” report) 	<ul style="list-style-type: none"> Will cite this constraint in the report and note need to consider policies to overcome. Some scenarios will be within cap, but we also need to test scenarios exceeding cap.
<ul style="list-style-type: none"> Note that TOD potential is a key co-benefit of commuter rail electrification (e.g., air rights over South Station) 	<ul style="list-style-type: none"> Will note in report.
<ul style="list-style-type: none"> Public EVSE would most likely be contracted to private providers, who would presumably pass costs on to users 	<ul style="list-style-type: none"> Will note in discussion of costs.
<ul style="list-style-type: none"> Electric bus costs could be increased by labor inefficiencies if significant charging time is required 	<ul style="list-style-type: none"> Will note in discussion of costs.
<ul style="list-style-type: none"> Cordon pricing potentially cheaper using cameras than gantries 	<ul style="list-style-type: none"> Will research and confirm appropriate cost estimates.
<ul style="list-style-type: none"> Proposed Pathway 3 (electrification plus low-cost travel demand) may be infeasible if VMT is not reduced enough to support reallocation of street space 	<ul style="list-style-type: none"> Will consider VMT reductions associated with this pathway when we run combined scenarios.

End Product

- “What would it take” policies to get Boston to carbon neutrality. Since these may not be zero-carbon emissions, should identify what the residual emissions are that need to be offset, as well as additional electricity demand.
- Identify “co-dependencies”, e.g., policies that might support or preclude one another. If we start down one path, does that close off other options? (E.g., tradeoffs on use of curb space for EV charging/parking vs. bikes and transit)
- Highlight importance of regional policies & cooperation. What also needs to happen outside of Boston?
- Policy options: Identify “no regrets” vs. policies with tradeoffs (and identify)
- Comments on key messages:
 - Pricing – bake equity into design of pricing instrument – not just mitigation

- Clean vehicles – achieving depends on price differential – not just higher fossil fuel prices

Project Team Response: Noted, will consider all these issues in the report.