Kendall Square Mobility Task Force Meeting

LOCATION OF MEETING: One Main Street, Cambridge, MA

DATE/TIME OF MEETING: September 20, 2016 from 5:00 PM – 7:00 PM

TASK FORCE ATTENDEES:
Joe Barr, City of Cambridge – Traffic, Parking, and Transportation Department
Kelley Brown, MIT
Peter Crawley, East Cambridge Planning Team
Brian Dacey, Kendall Square Association (Co-Chair)
Bob Dorer, Volpe National Transportation Systems Center
Melissa Dullea, MBTA
Jim Gascoigne, Charles River TMA
Scott Hamwey, MassDOT
Patrick Magee, East Cambridge Business Association
Michael O'Hearn, Boston Properties
Michael Owu, MIT Investment Management Company
Susanne Rasmussen, City of Cambridge (Co-Chair)

MASSDOT, MBTA, CITY OF CAMBRIDGE AND PROJECT TEAM ATTENDEES:
Tegin Bennett, City of Cambridge
Adam Shulman, City of Cambridge
Brian Kane, MBTA
Jeff Gonneville, MBTA
Sandra Clarey, McMahon Associates
Duncan Allen, IBI Group
Regan Checcho, RVA

PUBLIC:
John Attanucci, MIT
Peter Damrosch, MIT
Stephen Kaiser
Ian Reynolds, MIT
Jason Zogg, Cambridge Redevelopment Authority

PURPOSE/SUBJECT: Task Force Meeting #7

SUMMARY:

Introductions and Administrative Items

Susanne Rasmussen, City of Cambridge, opened the meeting at 5:16 PM. She noted that the agenda items for the meeting had been re-ordered to accommodate the schedules of the presenters. She also noted that the planned October public meeting had been cancelled because it conflicted with Yom Kippur and also the co-chairs believed that a meeting in December would be more productive.

The upcoming meeting schedule is:

Type	Description	Date
Task Force	Bus alternatives analysis and Grand Junction mobility charrette	October 25, 2016
Task Force	Draft policy recommendations	November 22, 2016
Public	Summary of work and discussion of draft recommendations	December 13, 2016
Task Force	Present/finalize recommendations	January 17, 2017

Brian Dacey, Kendall Square Association (KSA), thanks Jeff Gonneville, Chief Operating Officer, MBTA, for attending and providing a follow-up to his previous presentation to the group. He said that he was pleased with the direction the Task Force is moving in, including the work on the Grand Junction and bus routing.

Ms. Rasmussen noted that the meeting summary from the September 6 Task Force meeting was available at the registration table and has been posted online. She also noted that MBTA system maps were available at the registration table.

Red Line Capacity Analysis

Mr. Gonneville noted that the last time he spoke to the Task Force, he provided a glimpse of the system capacity study that was in progress. His presentation at this meeting will focus on the results of that study, which began about a year ago, as they relate to the Red Line.

System capacity is made of up three components: vehicle performance and signal system; infrastructure constraints; and operations and dwell time. The analysis looked at actual service data and visual observations, actual signals and station designs, vehicle performance modeling, and specific improvement initiatives.

The results show that the current maximum design capacity of the Redline is 13 trains/hour or 20,280 customers per hour. Fixed constraints include the distance between stations and civil design (such as track curves). Constraints that can be managed include vehicle performance, dwell times, train spacing, and headway adherence.

Mr. Gonneville said the MBTA looked at 3 different capacity improvement initiatives: 1) replacing the #3 Red Line cars and modest signal system changes; 2) reduction in dwell times; and 3) Communication Based Train Control (CBTC).

Replacing #3 Red Line Cars
Mr. Gonneville noted that the current Red Line fleet includes the following:

- #1 Cars – 74, in service since 1969, to be replaced by the #4 cars between 2019-2022
- #2 Cars – 58, in service since 1987, to be replaced by the #4 cars between 2019-2022
- #3 Cars – 86, in service since 1993, planned to be overhauled for $200 million

Mr. Gonneville explained that the analysis looked at replacing the #3 cars with #4 cars as part of a small bridging program. With this, the entire Red Line fleet would be composed of #4 cars.

The current Red Line signals are based on the maximum stopping distance of the #3 cars. The new #4 cars have an advanced propulsion system, an improved trigger for vehicle signal controller, and improved braking control technology. These cars reduce the braking distance by 30 percent and will run faster for longer. Based on this braking performance, minor speed code changes and replacement of the #3 cars, the Red Line theoretical maximum capacity increases from 13 to 20 trains/hour, a 50% increase in customers carried/hour.

Peter Crawley, East Cambridge Planning Team, clarified that this increased capacity assumed complete replacement of the fleet with #4 cars. Mr. Gonneville confirmed that was the assumption. Without the replacement of all the cars, the blocks would need to be designed to the #3 cars.

CBTC
Mr. Gonneville explained that a detailed analysis of a transition to using a moving block CBTC system on the Red Line was also completed as part of the study. The analysis found that a CBTC system would produce an improvement of just one train/hour beyond the improvement from the new cars and minor system changes.

The long dwell times in the downtown area and close spacing of stations limit CBTC as much as they limit fixed block systems. Mr. Gonneville noted that along the Braintree branch, there are longer blocks, but things get bottlenecked in the central subway, between South Station and Kendall.

Mr. Crawley asked if the MBTA investigated a model of skipping stations. Mr. Gonneville said the team modeled the elimination of Downtown Crossing station, just to see the effect of it, and it did not produce many gains.

Kelley Brown, MIT, asked what the marginal benefit of this improvement is (an additional one train/hour) over the investment in all new cars. Mr. Gonneville noted that the MBTA has allocated $200 million to overhaul the #3 cars. He said that $200 million may be considered to allocate for new vehicles instead which would also allow the MBTA to consider platform screen doors and autonomous vehicles. He said the cost of #4 cars as part of the

current contract is $1.9 million/car. He explained that this is a very good deal and the current rate of cars is about $3.5/car. He added that simply replacing the 86 #3 cars would not allow the MBTA to run 20 trains/hour. To do that, there would be a need of about 40 additional cars.

Jason Zogg, Cambridge Redevelopment Authority, asked if the current contract provided an option to add additional vehicles. Mr. Gonneville said it could not be done under the existing contract.

Mr. Dacey suggested that it would be a potential doubling of the rehabilitation cost. Mr. Gonneville said that was potentially the case and the Fiscal Management and Control Board (FMCB) is having that discussion now.

Mr. Dacey asked if this analysis included Orange Line impacts. Mr. Gonneville said the presentation to the Task Force is a part of a much larger presentation that included Orange Line analysis.

Dwell Time
Station dwell times limit capacity, and the stations with the largest dwell times are Downtown Crossing, Park Street and State Street. The dwell times at these stations are higher than the industry average.

Mr. Gonneville said that improving dwell time could enable a capacity increase of 15-20%. The MBTA is looking to get to an average dwell time of 45 seconds. He said the MBTA is developing a new presentation on this issue. Because the Orange Line is a one vehicle type fleet, the MBTA experimented by painting markings on the platforms at North Station and Downtown Crossing to guide passengers where to board. This resulted in a 63% decrease in average in dwell times.

Mr. Zogg asked about the other potential capacity improvements. He noted that in Europe and Canada, trains include fully-articulated walk-through vehicles that allow customers to spread out through the vehicle. Mr. Gonneville said this issue was looked at seriously a few years ago, and he participated in a trip to Toronto and to the manufacturer. He said that when the MBTA staff looked at the rail yards and some of the turn outs in the system, as well as the layout of the shops, it did not seem like it would be a good fit. He noted that the new Red Line cars will not have cabs at both ends.

Bob Dorer, Volpe Transportation Systems Center, thanked Mr. Gonneville for the presentation and continuing to think about dwell time. He asked about improvements to the double crossover at Alewife. Mr. Gonneville said that there are improvements scheduled for the interlockings at Alewife and JFK to help with the reliability issues, but there is not a complete redesign planned.

Mr. Dacey asked about the current assumption of 13 cars/hour. Mr. Gonneville said that 13 cars/hour assumes that everything is the system is going right. Currently the MBTA runs about 80% of full capacity. They are hoping to get that number to 90%.

Duncan Allen, IBI, asked if the 20 cars/hour assumed a dwell time fix. Mr. Gonneville said it assumes current dwell times.

Ms. Rasmussen thanked Mr. Gonneville and suggested Task Force members forward any follow-up questions to Melissa Dullea, MBTA, who would forward them along.

Focus40 Gaps Analysis

Scott Hamwey, MassDOT Office of Transportation Planning, provided an overview of the bus and rapid transit capacity gap analysis that is being conducted as part of the Focus40 project. The analysis focused on the question of where the rapid transit and bus routes in the MBTA system are over capacity today and where is the system likely to be over capacity in the year 2040.

Mr. Hamwey noted the analysis also looked at scheduled versus actual services. It also looked at what would happen if improvements were made in the following areas: State of Good Repair investments, Automated Fare Collection (AFC) 2.0, and adding bus lanes and transit signal priority at the municipal level.

Mr. Hamwey provided an overview of the definitions of capacity and assumptions in the analysis.

Rapid Transit Gap Analysis

Mr. Hamwey explained that typically due to internal and external factors, there are not as many trips run as scheduled. He showed a series of charts on the Orange Line rail capacity (by station) during peak AM periods, contrasting scheduled capacity with average, operated capacity.

Mr. Hamwey then turned to look at how much development is forecast near Rapid Transit lines for the year 2040. This was examined by looking at the ratio of passengers to average operatied capacity at peak load points, the percent of new households forecast to be in walking distance (1/2 mile) of stops at or before the peak load point along the route ("percent of new households upstream"), and the percent of new jobs forecast to be in walking distance (1/2 mile) of stops at or after the peak load point along the route ("percent of new jobs downstream.") A peak load point is the station with the highest number of riders passing through. The 2040 projections for households and jobs were developed using the Metropolitan Area Planning Commission (MAPC) forecasts.

Mr. Hamwey then examined Orange Line capacity today northbound (NB) - from Forest Hills to Oak Grove - and southbound (SB) - from Oak Grove to Forest Hills:

Direction	Peak Load Point	Percent capacity utilized today	2010 – Households upstream	2040 – Additional households upstream	2040 – % additional households upstream	2010- Jobs downstream	2040 – Additional jobs downstream	2040 – % additional jobs
NB	Back Bay	86.3%	31,100	8,000	26%	401,000	27,600-54,900	7% - 14%
SB	North Station	116.6%	13,300	6,000 – 8,700	45% - 65%	426,200	30,000 – 49,000	7% - 11%

Mr. Hamwey then reviewed the planned future capacity of the Orange Line. He noted that with new cars, it is estimated that it can run 4 ½ minute headways instead of the current 6 minute headways. He showed on a chart how these headways could move the number of passengers per hour that are projected.

Bus Capacity Gap Analysis
Mr. Hamwey then reviewed the bus capacity issues that exist today, which include under-scheduled service and under-operated service. He noted that there are some improvements planned by the MBTA, including AFC 2.0, and other potential improvements led by municipalities, like bus lanes. Mr. Hamwey also outlined bus capacity issues for the year 2040, included under.

Mr. Hamwey said Focus40 analyzed bus routes in the MBTA system that met the following criteria: key bus routes, local bus routes serving 3,500 or more passengers/day, and local routes serving major corridors. Mr. Hamwey showed a map demonstrating bus demand and capacity during the AM peak. He noted that there are typically aren't as many trips run during the peak hour as are scheduled. He added that the Mount Auburn corridor was one of the worst in terms of demand versus capacity. Ms. Rasmussen noted that 600 people required 600 cars, but only 19 buses.

Mr. Hamwey noted that there are a few measures that could be implemented to help capacity without large investment, including AFC 2.0, bus lanes, and transit signal priority. AFC 2.0, for example, reduces dwell times. He showed a chart demonstrating the additive capacity to the bus system with these improvements.

Mr. Dorer asked if this assumes the MBTA gets rid of RTS buses. Mr. Hamwey said that replacement of those buses are a State of Good Repair (SGR) investment. The analysis assumes they are all gone.

Mr. Hamwey then showed how these measures would impact specific routes:

- MBTA 47, IB, OB (Charles River)
- MBTA 87, 88, 89 (Somerville)
- MBTA 111, 93IB, 93OB (Chelsea/Charlestown)
- MBTA 70, 73, 71 (Watertown/Waltham)

Mr. Hamwey said Route 87 has two problem areas: the Lechmere/Union and Arlington ends. He said that while the Lechmere/Union issues would presumably go away with the Green Line Extension, the other part of the route (the non-Kendall part) is actually worse.

Mr. Hamwey showed the bus routes that have capacity constraints today during the AM peak, including MBTA 1, 7, 9, 34, 37, 40, 50, 57, 70, 71, 73, 77, 87, 111, 117 and 57A. He said that under today's average, operating conditions, an additional 21 buses would be needed to meet this capacity gap. Under scheduled operations, that number decreases to 11. With the improvements outlined earlier (bus priority, AFC 2.0), that number drops to 5.

Mr. Dacey asked about the fixed constraints of the repair yards in the system to bus capacity. Mr. Hamwey said that there are lots of capacity issues – the vehicles themselves, real

constraints on how to maintain the fleet, how many vehicles to store, and having enough operators. He said that another reality is the ability for the buses to move efficiently. It would be inefficient to add more buses to a route if they are just sitting in traffic.

Mr. Hamwey then outlined the likely bus routes with capacity constraints for the year 2040, using the same household/jobs methodology that was used for Rapid Transit. Mr. Crawley asked is any of these routes were Cambridge ones. Mr. Hamwey said the first 5 on the list interact with Cambridge, as do others on the list. Routes 65 and 85 did not meet the threshold.

Mr. Crawley asked what projections were used to determine growth. Mr. Hamwey said MassDOT was in the process to working with municipalities to get updated growth projections, like the K2C2.

Mr. Hamwey also showed how Focus40 was conducting spatial gap analyses to look at major employment destinations outside of the downtown core relative to underserved residential neighborhoods. The project will be evaluating investment strategies for effectiveness in closing these gaps. The gaps are visualized using the CoAX's "collaborative accessibility" tool. Mr. Hamwey went through this exercise, using the Longwood Medical Area as an example, but noted it could be performed for the Kendall area.

Mr. Hamwey also noted that the Focus40 will be holding their next event, an interactive open house on October 13 from 5PM – 8PM at the Bolling Building in Dudley Square.

Final Bus Scenarios

Ms. Rasmussen said that due to time constraints, the discussion on performance measures would be postponed until the next Task Force meeting.

Tegin Bennett, City of Cambridge, then shared the final bus scenarios that had been updated based on feedback from the last meeting. These scenarios are being analyzed by CTPS and the results will be shared at the November meeting. She distributed a handout listing the scenarios and a graphic showing the preliminary scenarios.

Ms. Bennett then reviewed each scenario. Ms. Rasmussen noted that the City is not proposing to eliminate the MBTA 68, but is just looking at it for analysis. She emphasized that the scenarios are not proposals.

Mr. Allen asked during the discussion of the CT4 if the Task Force wanted the project team to consider the shorter route since it was being analyzed in the year 2040. Ms. Rasmussen said the shorter route is not difficult to accomplish, but would be expensive. Mr. Dorer suggested the Task Force be bold and use that assumption. There was general agreement to this change in routing.

Bus Priority Corridors

Ms. Rasmussen then reviewed the bus priority corridors under consideration by the Task Force. She noted that Mass Ave. does not serve Kendall directly and will be studied separately by the City of Cambridge. She also noted that passenger volumes on Hampshire and Broadway are relatively low.

She noted that a Lechmere-Kendall bus corridor could improve EZ-Ride times, improve transit access to Binney Street, and leverage accessibility of the Green Line Extension. She emphasized that while she was about to present options to make a corridor, but these should not be considered proposals at this point:

- First Street Option 1: Replace parking with a NB bus-only lane with one mixed-use travel lane in each direction. Bicycle facilities in both directions.
- First Street Option 2: Replace parking with alternating bus lane, split halfway between Cambridge and Binney Streets. One mixed-use travel lane in each direction and bicycle facilities in both directions.
- Binney between First and Broadway: Convert travel lane to bus lane with cycle tracks plus mixed travel lanes/turn lanes in both directions.
- Third Street Option 1: Replace parking with bus lanes in both directions. One mixed travel lane and cycle tracks in each direction. Look at bus-only left turn lane from Main onto Third across Broadway.
- Third Street Option 2: Replace parking with alternating side bus lanes. One mixed travel lane and cycle tracks in each direction.

Ms. Rasmussen also noted that the project team had looked at a Vassar Street possibility but the parking lane is 7 ft. wide and could not be used to create a bus lane.

She said that the results of this analysis will be back in the same time frame as the bus route analysis. At that point, the Task Force will see if any of these options are possible.

Michael Owu, MIT Investment Management Company, noted that cycle tracks and the elimination of parking were present in all options. He said that many retailers require on-street parking on Third Street. He asked if there could be some options with parking and no cycle tracks. Ms. Rasmussen said these streets already have bike facilities and they would not be eliminated. John Attanucci, MIT, asked if there were any considerations of a joint bus/bike lane. Ms. Rasmussen said that would be a good topic of discussion for November, but noted she had safety concerns about shared lanes with high-frequency bus service. Ms. Rasmussen said the project team will look at ways to retain retail parking. Mr. Dacey added there are not that many spaces on Third Street, and perhaps side street options could be added. Patrick Magee, East Cambridge Business Association, said the issue is not always the reality of available parking, but the perception of it.

Mr. Crawley asked if there were ways to improve Third Street, which he said is typically only backed up in one direction during peak times. He suggested a zipper-lane. Ms. Rasmussen said she was not aware of any local examples of this for smaller roads and thought it could affect bus circulation. Another participant said other cities have reversible travel lanes, but they are typically on longer blocks and bigger streets.

Next Steps

Ms. Rasmussen reviewed the next steps and noted that the Grand Junction workshop will be held on October 25. She also said she would send links out to background materials and previous studies in advance of the workshop.

Public Comment

Ms. Rasmussen then invited the public to share their comments.

Steve Kaiser thanked the Task Force and Mr. Gonneville for the presentation, which he said was the first to public presentation to talk about ways to improve capacity on the Red Line. He said he only critique of the presentation is that bunching issues cause inefficient loading. He suggested implementing a Phase 1 to solve some of the bunching issues before moving on to the engineering solutions.

Mr. Kaiser also suggested Task Force members attend FMCB meetings. He said that he attends many meetings and does not remember any presentations on buses. He thinks this issue is an important one for the Board to be made aware of.

The meeting adjourned at 7:04 PM.