Forging Ahead: Scenario and Service Planning

Fiscal and Management Control Board
September 21, 2020
Laurel Paget-Seekins & Kat Benesh
Agenda

• How we plan to address scenario planning and uncertainty
• Understanding the potential range of needed savings
• Defining transit critical areas and transit propensity
• Defining access and service quality
• Discussion of trade-offs within the framework
The crisis is creating fiscal challenges for all transit agencies, not just the MBTA

- **New York’s MTA** is projecting a budget loss for this year of about $3.8B (22%) and a larger loss of $6.6B (38%) next year as ridership declines of over 90% may require decreased service and increased fares absent any additional federal funding.

- **Philadelphia’s SEPTA** is looking at upwards of $300M in lost revenue through mid-2021 and has already eliminated about half of its bus and trolley routes, closed 18 subway stations, and cut service entirely on six Regional Rail lines as it now gradually adds back service (normal schedule timeline still not set).

- **San Francisco’s SFMTA** is planning for a $200M loss in the latest budget that would translate into 40 of 68 bus lines being cut, possibly permanently, after being put on hiatus at the beginning of the shelter-in-place order.

- **Los Angeles Metro** is projecting revenue loss of $730 million and is proposing to keep service at 81% of pre-COVID levels through June 2021.

- Due to the work the MBTA has done over the past 5 years to shore up its finances and the plans to move flexible capital funds, we have time to plan.

- We can use this time to make sure we can preserve our core service and create the foundation for the recovery of both ridership and revenues.
Scenario Planning: how we plan to address uncertainty

- We are working with MassDOT planning and OPMI and CTPS to develop three versions of the short (1 year) and medium-range (2-3 years) future scenarios to guide service and capital decisions
  - The scenarios will make different assumptions about the pace of economic recovery projections, the durability of telework and changes in travel patterns, as well as the length of the pandemic
- In the short-term the scenarios will be used to recast the range of potential FY22 fare revenue projections and evaluate ridership propensity to return
- This will be an iterative process, with the scenarios updated as new information becomes available so that they can continue to be used to shape capital investments as well as future service planning decisions
  - The MBTA makes service changes quarterly for bus/rapid transit, twice a year for commuter rail
- The initial version of the short-term scenarios will be presented to the Board on Oct 19th
Estimating the Potential Range of Needed Budget Savings

• We must plan for a range of potential futures/scenarios as the return of ridership largely depends on future external events and therefore the projected budget deficit remains highly uncertain. The Scenario planning will inform our decisions.

• Closing deficits can be done with a combination of maximizing revenue (both own source and potential additional federal funding), allocation of capital funding and savings initiatives, as well as service changes.

• The next two slides are included to help lay out the potential range of needed budget savings from service changes in different scenarios, making certain assumptions about likely revenue and the magnitude of non-service related savings.

• Savings from service changes will need to come from the $1.19 billion portion of the MBTA budget that roughly represents
FY21 & FY22 Budget Savings Scenarios
Focus on Service Level Planning

• For service level planning purposes, the table below models the targeted amounts required

<table>
<thead>
<tr>
<th>FY21 &amp; FY22 Budget Gap &amp; Options Summary</th>
<th>August Pro Forma Estimate</th>
<th>Observed Social Distancing Scenario w/ level Capital Shift</th>
<th>Observed Social Distancing Scenario w/ level Increased</th>
</tr>
</thead>
<tbody>
<tr>
<td>August Pro Forma Budget Gap</td>
<td>$ (308)</td>
<td>$ (577)</td>
<td>$ (577)</td>
</tr>
<tr>
<td>Capital Salaries</td>
<td>$ 134</td>
<td>$ 134</td>
<td>$ 134</td>
</tr>
<tr>
<td>Federal Formula Funds</td>
<td>$ 160</td>
<td>$ 160</td>
<td>$ 280</td>
</tr>
<tr>
<td>Capital Funding Reallocation Subtotal</td>
<td>$ 294</td>
<td>$ 294</td>
<td>$ 414</td>
</tr>
<tr>
<td>Non-Service Programmatic Savings</td>
<td>$ 60</td>
<td>$ 60</td>
<td>$ 60</td>
</tr>
<tr>
<td>Target for Service Level Savings</td>
<td>$ 120</td>
<td>$ 315</td>
<td>$ 210</td>
</tr>
<tr>
<td>Options vs. Gap ($)</td>
<td>$ 106</td>
<td>$ 32</td>
<td>$ 47</td>
</tr>
<tr>
<td>Gap as a % of Options</td>
<td>74%</td>
<td>95%</td>
<td>92%</td>
</tr>
<tr>
<td>Options vs. MBTA Target ($400M)</td>
<td>$ 14</td>
<td>$ 209</td>
<td>$ 224</td>
</tr>
</tbody>
</table>

• Risks
  • Fare Revenue reduction FY21 Q3 & Q4
  • Maintenance costs increase due to deferred capital work
  • Capital Salary Legislation not enacted
  • Complication and delay in implementation
  • Unknown unknowns
Portion of the MBTA Budget that represents direct costs for Service Operations

- Transportation services represent close to $1.19B of MBTA operating expenses across all modes
- Direct Operated services include transportation and vehicle maintenance (incl. fuel), but not any infrastructure maintenance
- Purchased services include total annual contract value
- Not all costs shown are variable
## Defining Our Essential Services

Based on two analyses:
- Where are the trips made by transit critical populations
- Where we have high ridership now or are likely to in the next year or two

<table>
<thead>
<tr>
<th></th>
<th>Serving high transit critical population</th>
<th>Serving low transit critical population</th>
</tr>
</thead>
</table>
| **Higher ridership**
  (current or propensity) | Preserve or enhance service / access
  *(though individual trips may still be affected)* | Consider trade-offs depending on budget availability |
| **Lower ridership**
  (current or propensity) | Consider trade-offs depending on budget availability | Most likely to reduce service levels |

This process is designed to create an equitable network that preserves access and quality of service available to transit critical populations (low-income, people of color, seniors, people with disabilities, and no to low vehicle households).
Visualizing the Essential Services: the Data

Where are the transit critical populations traveling?
  • We are augmenting Census data of transit critical households with trip-making during the pandemic because we know that the demographics on our services are different than the census tracts they travel through
  • Data sources: Census and Streetlight data of trip-making

• What are the high ridership and propensity for ridership return services?
  • We are combining current ridership and ridership return rates with an analysis to project where we think riders are most likely to return in the short-term
  • Data sources: ridership, employer panel survey, customer panel survey, demographics of pre-COVID riders, existing MBTA research on bus ridership, scenarios, data from peer agencies
Visualizing the Essential Services: the Analysis

• The analysis will be done at the line/route level or in some cases corridors
  • For example, we will look at the stations between Boston and Beverly separate from the Rockport and Newburyport lines
• We will create a map of the essential service area
• Analysis will be presented to the FMCB on October 5

<table>
<thead>
<tr>
<th>CR and Rapid Rail Lines</th>
<th>Zero cars</th>
<th>&lt; .5 cars per person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>27%</td>
<td>44%</td>
</tr>
<tr>
<td>Orange</td>
<td>25%</td>
<td>43%</td>
</tr>
<tr>
<td>Green</td>
<td>36%</td>
<td>50%</td>
</tr>
<tr>
<td>Blue</td>
<td>32%</td>
<td>50%</td>
</tr>
<tr>
<td>Newburyport/Rockport</td>
<td>7%</td>
<td>20%</td>
</tr>
<tr>
<td>Haverhill</td>
<td>5%</td>
<td>15%</td>
</tr>
<tr>
<td>Lowell</td>
<td>3%</td>
<td>16%</td>
</tr>
<tr>
<td>Fitchburg</td>
<td>10%</td>
<td>22%</td>
</tr>
<tr>
<td>Worcester</td>
<td>7%</td>
<td>18%</td>
</tr>
<tr>
<td>Needham</td>
<td>4%</td>
<td>21%</td>
</tr>
<tr>
<td>Franklin</td>
<td>3%</td>
<td>15%</td>
</tr>
<tr>
<td>Providence</td>
<td>4%</td>
<td>12%</td>
</tr>
<tr>
<td>Fairmount</td>
<td>15%</td>
<td>39%</td>
</tr>
<tr>
<td>Middleborough</td>
<td>5%</td>
<td>16%</td>
</tr>
<tr>
<td>Kingston/Plymouth</td>
<td>2%</td>
<td>16%</td>
</tr>
<tr>
<td>Greenbush</td>
<td>1%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Source: 2015-2017 systemwide passenger survey
Defining service quality

- The Service Delivery Policy has two types of service metrics
  - Access to service: span and geographic coverage
  - Service quality: frequency

<table>
<thead>
<tr>
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<th>Serving high transit critical population</th>
<th>Serving low transit critical population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher ridership</td>
<td>Goal to maintain Service Delivery Policy standards, maintaining service quality (though individual trips may change)</td>
<td>Decrease service quality and/or access</td>
</tr>
<tr>
<td>Lower ridership</td>
<td>Decrease service quality and/or access</td>
<td>End access or decrease service quality</td>
</tr>
</tbody>
</table>

Network level measures for competitive trip coverage and regional access will be used to evaluate the packages.
Where are the trade-offs

Analysis will be done at the bus route/corridors, rapid transit lines, commuter rail lines/corridors, ferry routes, and overall RIDE service area

<table>
<thead>
<tr>
<th>higher ridership (current or propensity)</th>
<th>Serving high transit critical population</th>
<th>Serving low transit critical population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preserve or enhance service / access (though individual trips may still be affected)</td>
<td>Consider trade-offs depending on budget availability</td>
<td></td>
</tr>
<tr>
<td>Consider trade-offs depending on budget availability</td>
<td>Most likely to reduce service levels</td>
<td></td>
</tr>
</tbody>
</table>

*Where to apply trade-offs in order to preserve essential service*
Importance of trade-offs

• While starting from perspective of preserving essential service, we can’t ignore trade-offs

• If we want to preserve or improve parts of the system, it will make something worse for someone

• If we cut service, we will have choices to make on how we cut

• These are policy decisions with no “right answer”
### “Top-Left” Example – Preserve Essential Service

- **Service Delivery Policy** sets “minimum” service to target for services in “top left” box.

- Individual trips might change.

- Both frequency and span of service currently exceed Service Delivery Policy for many routes and rail lines.

- Therefore some routes and rail lines may be able to preserve essential service and still either reduce frequency and/or decrease span of service.

#### Rapid Transit Headways

<table>
<thead>
<tr>
<th>Period</th>
<th>Service Delivery Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM &amp; PM Peak</td>
<td>Every 10 minutes</td>
</tr>
<tr>
<td>All other weekday periods</td>
<td>Every 15 minutes</td>
</tr>
<tr>
<td>Saturday and Sunday</td>
<td>Every 15 minutes</td>
</tr>
</tbody>
</table>

#### Rapid Transit Span of Service

<table>
<thead>
<tr>
<th>Period</th>
<th>Service Delivery Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday</td>
<td>6:00 AM - midnight</td>
</tr>
<tr>
<td>Saturday</td>
<td>6:00 AM - midnight</td>
</tr>
<tr>
<td>Sunday</td>
<td>7:00 AM - midnight</td>
</tr>
</tbody>
</table>
“Top-Right” Example – Mode switching or transfers

- Alternative service available for drive to transit customers
- Ferry characteristics
  - 4% Low Income
  - 2% Minority
  - 33% 0 to 1 car household
- Ferries may be considered higher ridership propensity, but low transit critical population
- If reduce or eliminate ferry service, alternative access to Greenbush Line (5-15 minute drive) for Hingham and Hull passengers
- Fare structure is comparable
“Bottom-Left” Example – Increase walkshed to preserve quality service

- Access to quality service maintained by consolidating trips on single service, but may be accessed differently

- Illustrative Bus Route A
  - 29% Low Income
  - 43% Minority
  - 76% 0 to 1 car household

- High transit critical population, but low ridership bus route A

- If bus route A reduced or eliminated, riders would walk 5 minutes to either rapid transit and/or alternative high frequency bus route (Key Bus Route or similar)

- May also result in additional transfers or rapid transit fare
“Bottom-Right” Example – Decrease service and/or decrease access

• Illustrative Commuter Rail Line
  • 7% Low Income
  • 8% Minority
  • 41% 0 to 1 car household
  • If low ridership propensity at outer stations on a rail line but higher propensity at Gateway City or urban rail-type stations closer to Boston, can short-turn more trains to preserve service to inner stations while decreasing service to the end of line

Non-express bus route  Rapid Transit

• Illustrative Express Bus Route B
  • 10% Low Income
  • 35% Minority
  • 51% 0 to 1 car household

• Shorten or eliminate bus route if low critical transit and low ridership propensity. Riders may become >0.5 miles away from public transit or may still access transit via alternative routes/modes; may result in additional transfers
## Summary of Potential Trade-offs

Types of service changes for each quadrant (may not exhaustively represent every trade off in service packages ultimately presented)

<table>
<thead>
<tr>
<th>Higher ridership</th>
<th>Serving high transit critical population</th>
<th>Serving low transit critical population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible changes to span and frequency within Service Delivery Policy, changes to routes that preserves access</td>
<td>Access to different service for drive to transit customers, changes to frequency and span</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lower ridership</th>
<th>Long walk to more frequent service</th>
<th>Potential to end access within ( \frac{1}{2} ) mile, lower frequency and span</th>
</tr>
</thead>
<tbody>
<tr>
<td>May also result in additional transfers or changes to fares</td>
<td></td>
<td></td>
</tr>
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Timeline for Service, Budget, and Capital Updates

October 5 (FMCB)
- **Budget:** Return to the board to detail August results (monthly recurrence) and FY21 and FY22 revenue projections
- **Service Planning:** High level scenarios by mode based on essential service analysis, public engagement plan
- **Capital Planning:** Seeking policy direction on capital tradeoffs

October 19 (Joint Board)
- **Scenario:** Short-term scenarios
- **Budget:** Updating FY21 and FY22 revenue projections

November 2 (FMCB)
- **Budget:** Update on FY21 savings initiatives to achieve budget targets
- **Service Planning:** More detailed service scenarios
- **Capital Planning:** Present recommended CIP reprioritization to accommodate shift of 5307 funds to operating and other reductions

December 2020 (FMCB)
- **Service Planning:** Board decision on service level packages

July 1, 2021
- **Budget:** FY22 begins and three-pronged approach implemented
Appendix
## Appendix: Working Definitions

<table>
<thead>
<tr>
<th><strong>Transit critical</strong></th>
<th>Low-income, people of color, seniors, people with disabilities, zero or low car households</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transit propensity</strong></td>
<td>Likelihood of taking transit, based on demographics, land use and employment factors</td>
</tr>
<tr>
<td><strong>Simpler</strong></td>
<td>Easier to understand and/or predictable by riders, such as clockface departures, same frequency all day, and/or fewer variants</td>
</tr>
<tr>
<td><strong>Equitable</strong></td>
<td>Preserving access and quality of service available to transit critical populations</td>
</tr>
<tr>
<td><strong>Redundancy</strong></td>
<td>When the same or similar trip (potentially requiring a transfer), is provided by the same or different modes</td>
</tr>
</tbody>
</table>
Origin Locations of Trips by Low-Income People

- Preliminary map of levels of low-income travel in the MBTA service area
- Does not account for ridership levels
Appendix: Service Principles: Trade-offs to Develop Service “Packages”

• Alignment on **principles** help us redesign service:
  • In the short-term to serve those who need us most
  • In the medium term as a foundation for recovery
  • Are scenario-agnostic, but help translate the scenarios into service plans

• **Principles answer three key questions:**
  • What people and places (or trips) are we prioritizing?
  • What kind of system do we want at the “end”, regardless of whichever scenario(s) is most likely?
  • What are acceptable service outcomes (based on decisions above)?
## Appendix: Principles

<table>
<thead>
<tr>
<th>Key question</th>
<th>Recommended Principle</th>
<th>Alternative <em>(not recommended)</em></th>
</tr>
</thead>
</table>
| What people and places are we prioritizing?     | • **Existing and likely to return ridership**, including durable ridership during COVID-19 and transit critical communities  
   • Possible service level changes to **all modes**, but analyzed at the route and line level                                                                 | • Prioritize fare revenue or cost per passenger to drive decision-making  
   • Exclude some mode(s) from service change analysis                                                                                                                                 |
| What kind of system do we want?                  | • **Simpler, less redundant, and more equitable system**, which is therefore more resilient, efficient, and easier to use  
   • Preserve/invest in **quality service** (frequency) in key areas instead of degraded service everywhere  
   • These are **permanent** changes – if and when additional resources available, we **will not** recreate the pre-COVID system                                           | • Target same % reduction across all modes, lines and/or routes  
   • Try to maintain existing network structure in long term                                                                                                  |
Appendix: Selected Goals/Objectives from previous work

**Focus40 Goals**

- Sustainability: Contributing to achieving greenhouse gas reduction goals
- Livability: Improving quality of life with more customer-focused transit options
- Equity & Affordable Housing: Improving mobility options for all—regardless of income or ability—and supporting more affordable housing near high-quality transit
- Economic Competitiveness & Prosperity: Supporting local and regional economic growth and competitiveness

**Rail Vision Objectives**

1. Match service with growth & changing needs of the region
2. Enhance economic vitality
3. Improve passenger experience
4. Provide an equitable and balanced suite of investments
5. Achieve climate change and sustainability targets
6. Maximize return on investments