Massachusetts Bay Transportation Authority

Bus Network Redesign
Demonstration Projects

Fiscal and Management Control Board
December 9, 2019
Caroline Vanasse
Bus Network Redesign Demonstration Projects

The FMCB asked the project team to identify Demonstration Projects by the end of 2019.

• Demonstration Projects are intended to be scalable and transferable.
• All Demonstration Projects are additive and will preserve current service levels; no service will be cut.

Demonstration Projects will help test:

• **Network-level metrics:** What does competitive service look like?
• **Service design principles:** What are the building blocks of the network redesign?
• **Implementation logistics:** How do we market and implement new services?
• **Scalability:** Based on the projects, how will we scale these up to the network level?
Demonstrating the Network We Want

- Test design strategies that cover a range of concepts
  - **New or improved service** to a high-demand destination
  - **New or improved service** for Environmental Justice communities
  - **Simplify** an *existing* route
  - **All-day frequency** on an *existing* route
  - Explore the **relationship of bus to rail**

**Test:**

- Network-level metrics
- Service design principles
- Implementation logistics
- Scalability
Demonstration Project Selection Criteria

**PROJECT IDEAS**

**DESIGN STRATEGY MATCH & TRAVEL DEMAND**
- LBS data, ODX, ridership

**MAXIMIZE CURRENT INFRASTRUCTURE INVESTMENTS**
- bus lanes, signal priority, etc.

**OPERATIONAL FEASIBILITY**
- ease of operations, cost, scalability

**GEOGRAPHIC EQUITY**

**SELECTED DEMONSTRATION PROJECTS**

All ideas considered for BUS NETWORK REDESIGN
Proposals & Outreach

- **927** proposals received from individuals and organizations via the online submission form
- **118** additional proposals from 20 municipalities
- **1,045** total proposals

**Outreach**

<table>
<thead>
<tr>
<th>Online</th>
<th>MBTA Website (Submissions from online intake open from July 23rd – October 4th)</th>
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<tbody>
<tr>
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<td>Twitter</td>
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<td>E-Mail</td>
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<table>
<thead>
<tr>
<th>Municipal</th>
<th>Planning staff (51 municipalities with bus service)</th>
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<tbody>
<tr>
<td></td>
<td>City of Boston Neighborhood Liaisons</td>
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<tr>
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<td>Boston City Councilors and other Elected Officials</td>
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<td></td>
<td>Brookline Chamber of Commerce</td>
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<td>Brookline Office of Diversity, Inclusion, and Community Relations</td>
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<thead>
<tr>
<th>Community Organizations</th>
<th>Social service organizations</th>
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<tr>
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<td>Youth organizations</td>
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<td>Organizations representing elderly and people with disabilities</td>
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<thead>
<tr>
<th>BNRD External Task Force</th>
<th>Advocacy groups</th>
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<td>Business groups</td>
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<td>Housing groups</td>
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<td>Municipalities</td>
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<td>Social service organizations</td>
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Who Submitted Demonstration Project Ideas?
## Summary of Demonstration Project Proposals

<table>
<thead>
<tr>
<th></th>
<th>New or Improved Service to a High-Demand Destination</th>
<th>New or Improved Service for Environmental Justice Communities</th>
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<th>All-Day Frequency on an Existing Route</th>
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<tbody>
<tr>
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<td>✗</td>
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<tr>
<td><strong>2</strong></td>
<td>Broadway High Frequency Corridors (104/109; 89/101)</td>
<td>✗</td>
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<td>✗</td>
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<td><strong>3</strong></td>
<td>Route 112 Improvements</td>
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<tr>
<td><strong>4</strong></td>
<td>Partnership with City of Boston: Center City Link</td>
<td>✗</td>
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## Idea Sources

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  • City of Boston  
  • Roxbury-Dorchester-Mattapan Study |

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  • City of Everett |

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| **3** | **Route 112 Improvements** |  • Demonstration Project Feedback Form  
  • Chelsea Task Force (Including City of Chelsea)  
  • City of Everett  
  • Everett Transit Action Plan |
Demonstration Project Proposal: Mattapan to LMA

Purpose and Need

- Currently, Mattapan residents have no direct connection to the LMA.
- The LMA and Mattapan were both designated as Focus40 Priority Places and Go Boston 2030 identified a Mattapan-LMA connection as a high priority for the City.
- A direct connection between Mattapan and the LMA would improve access to job opportunities and medical appointments. This connection also has the potential to attract new transit riders.
Demonstration Project Proposal: Mattapan to LMA

**travel time**
- Mattapan Station to LMA (inbound at AM peak, Brookline Ave @ Longwood)
  - Car: 24–65 min
  - Bike: 33 min
  - Bus: 42–57 min

Note: Transit travel time does not include variability due to traffic. Car travel time takes into account variability due to traffic.

**frequency**
- Service to Ruggles and Jackson Square
  - Route 28: 9 min peak, 12 min off-peak
  - Route 29: 13 min peak, 50 min off-peak

- Connecting Service (to Brookline Ave @ Longwood)
  - Route 28: 15/15/20 min peak, 20/25/50 min off-peak via Routes 8/47/CT2

**reliability**
- Route 28: 73% as of Nov 19, 2019
- Route 29: 50% as of Nov 19, 2019

Note: 75% is the reliability target for non-Key Bus Routes. 80% is the reliability target for Key Bus Routes.*
Demonstration Project Proposal: Mattapan to LMA

**Project Idea**

Extend 29 to LMA (terminating @ Kenmore)
- 30 min peak/30 min off-peak weekdays
- + New service from Brighton Center through LMA to Ruggles on the 65
- Improved bus stop amenities

**Benefits**

- Direct Mattapan-LMA connection with increased frequency
- Direct Brighton Center-LMA connection
- Test impact of improving access to job opportunities
- Test different off-peak frequencies
- Opportunity to work with the City of Boston on bus lanes they are already examining through the route (Blue Hill Ave, Seaver St., Columbus Ave.)
Demonstration Project Proposal: Broadway High Frequency Corridors

Purpose and Need

- **89/101 and 104/109** both have bus lanes on major sections of Broadway (Somerville and Everett, respectively), which have sped up buses for riders.

- Opportunity to create rapid transit-like experience along major corridors by actively regulating headways along trunk section of routes with bus lanes.

- These strategies help us test operational feasibility, technical tools (such as the bus dispatch tool), cost, and impacts of strategies which could be scaled up to other parts of the network.

- Opportunity to show commitment from the MBTA to improve service where city partners have made transit priority investments.
Demonstration Project Proposal: Broadway High Frequency Corridors

**频率**

89/101 Broadway

高峰时间示例基于实际到达数据

<table>
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<tr>
<th>时间</th>
<th>到达时间</th>
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<tbody>
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<td>8:49</td>
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<td>9:00</td>
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**乘客量**

平均工作日89/101趟次7,681

平均工作日104/109趟次7,075

**可靠性**

61-65% 89/101

65-75% 104/109

as of Nov 19, 2019

Note: 75% is the reliability target for non-Key Bus Routes. 80% is the reliability target for Key Bus Routes.
# Demonstration Project Proposal: Broadway High Frequency Corridors

<table>
<thead>
<tr>
<th><strong>Project Idea</strong></th>
<th><strong>Benefits</strong></th>
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<tbody>
<tr>
<td>All day frequency on Broadway bus lanes (in Everett and Somerville)</td>
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<tr>
<td>• “KBR” frequency on trunk sections of Broadway in Somerville and Everett where there is a bus lane</td>
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<tr>
<td>• Hire inspectors to manage more even headways and use newly developed dispatching software</td>
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<tr>
<td>• Improve bus stop amenities</td>
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</tbody>
</table>

- **10 min peak frequency** on Broadway trunks
- **15-20 min off-peak frequency** on Broadway trunks
- Improves trip time, reliability, frequency, and span
- Use new dispatching software and strategies

**Question:** Can implementation be phased in from Fall 2020 – Spring 2021?
Demonstration Project Proposal: 112 Improvements

Purpose and Need

- Two of our highest-demand bus markets (Everett and Chelsea) lie little more than a mile apart, yet have only infrequent and indirect service
- Route 112 serves multiple purposes:
  - Only direct connection between downtown Everett and downtown Chelsea
  - Community service to Chelsea Soldiers’ Home and Admirals Hill
  - Provides connection to Orange Line and Blue Line
Demonstration Project Proposal: 112 Improvements

**travel time**  
Bellingham Square to Everett Square (peak)
- 10 min  
- 37 min  
- 50–55 min

**frequency**
- 45 min peak
- 50–55 min off-peak

**reliability**
- 54% for 112
  vs. 81% for SL3

**ridership**
- 1,147 average weekday 112 trips

Note: Transit travel time is based on the 90th percentile run times.

Note: 75% is the reliability target for non-Key Bus Routes. 80% is the reliability target for Key Bus Routes.

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1 | Average weekday trip number from fall 2018 ridership data via Automated Passenger Counter (APC).
2 | Reliability percentage for November 19, 2019 within the past 30 days from the MBTA Performance Dashboard.
Demonstration Project Proposal: 112 Improvements

**Project Goals**

- Improve service for existing 112 riders
- Provide shorter trip between downtown Chelsea and downtown Everett

**Project Ideas**

**Immediate-term pilot**
- Add bus to increase frequency along existing route

**Long-term pilot**
- Design and pilot improved service plan for the 112 to meet the needs of the community members in the corridor

**Next Steps**

- Coordinate with City of Chelsea, Chelsea Task Force, and City of Everett to design solutions
Total Estimated Costs for Demonstration Projects

<table>
<thead>
<tr>
<th>Estimated Costs</th>
<th>Annual Cost</th>
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<tbody>
<tr>
<td><strong>Operating</strong></td>
<td></td>
</tr>
<tr>
<td>Basic service ops, outreach &amp; marketing, project manager for implementation, snow removal and maintenance at bus stops, real time sign operating costs</td>
<td>$8.5 Million</td>
</tr>
<tr>
<td><strong>Capital</strong></td>
<td></td>
</tr>
<tr>
<td>Bus stop amenity and infrastructure upgrades</td>
<td>$3.5 Million*</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$12 Million</td>
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</table>

Notes: *Capital Costs for associated bus shelters and amenities improvements are part of the Bus Shelters and Amenities Program (currently unprogrammed in CIP) Operating costs may not necessarily fall into a single year; fiscal year is TBD. Costs for Center City Link not included in estimate.
Demonstration Project Partnership with the City of Boston: Center City Link

- Create a **2-seat ride to Seaport** from Green, Orange, Blue, North Station, and 111
- **Creation of a central spine** – potential to thread additional northside (92, 93, 111, 300 series), Silver Line (SL4/5), and westside (500 series) buses through corridor to create very high frequency, high quality travel experiences.
- Increase access, reduce travel times, and improve reliability from South Boston to Downtown
- Reduce congestion on Silver and other lines at peak load points
- Reduce private shuttle traffic

Note: Timeline and Service Plan are TBD
Implementation Timeline

**Route 112 Improvements**
- **Summer 2020 & Spring/Summer 2021**
  - (Peak and off-peak resources)
  - Near-term and longer-term improvements

**Broadway High Frequency Corridors**
- **(104/109; 89/101)**
  - Off-peak: Fall 2020
  - Peak: Spring/Summer 2021

**New Route: Mattapan to LMA**
- Spring/Summer 2021 (Peak resources)

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- **WINTER 2020**
  - FMCB Vote

- **SPRING 2020**

- **SUMMER 2020**

- **FALL 2020**

- **WINTER 2021**

- **SPRING 2021**

- **SUMMER 2021**

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**Design Projects**

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Conduct Evaluation (including Equity Analysis)
APPENDIX
Demonstration Project Timeline

<table>
<thead>
<tr>
<th>2019</th>
<th>2020</th>
<th>2021</th>
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<tbody>
<tr>
<td>JUL - SEP</td>
<td>OCT</td>
<td>NOV</td>
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</table>

Collect Project Ideas
Prioritize & Select Projects
Design Demonstration Projects
Demonstration Project Implementation
Ongoing Evaluation
Final Evaluation

- FMCB approves Demonstration Projects (Jan 2020)
- Implementation timeline will vary based on project and availability of resources
- Projects will inform the Bus Network Redesign Recommendation

Notes:
- OCT, NOV, DEC: OCTOBER, NOVEMBER, DECEMBER
- JUL: JULY
- SEP: SEPTEMBER
Mattapan-
LMA Proposal Map

Note: Route is subject to change.
Metrics for Evaluating Demonstration Project Success

- Ridership
- Rider Surveys
- Service Delivery Policy Performance Metrics
- Bus Network Redesign Competitiveness Metrics
- 6 month evaluation and 12 month equity analysis evaluation