

RAIL VISION



Briefing to FMCB

MAY 6, 2019

Status Update

- Outreach Update
- Review of Seven Service Alternatives
- Identification of Investment Needs



Input from Public Engagement

- Public Meeting
- State House/Legislative Briefing
- Advisory Committee
 - Five full-group meetings (to date)
 - Three optional meetings focused on technical subjects
 - Individual briefings
- Non-Rider Survey
- Regional Briefings
 - Boston MPO Regional Transportation Advisory Council (RTAC)
 - Commuter Rail Communities Coalition
 - North Shore Coalition
 - Lynn Community Meeting
 - Merrimack Valley Planning Commission
 - Northern Middlesex Council of Governments
 - MAPC North Suburban Planning Council (NSPC)
 - Middlesex 3 Coalition
 - Cambridge Transit Committee
 - 495/MetroWest Partnership
 - Worcester Line Working Group
 - Ashland Board of Selectmen
 - MASCO
 - MAPC Three Rivers Interlocal Council (TRIC)
 - South Shore Chamber of Commerce
 - Old Colony Joint Transportation Committee

Input from Non-Riders

- Nearly 3,000 people responded to the survey
- Findings:
 - Inconvenience limits use more than cost – 77% selected convenience over cost
 - Preferences split along geographic lines between express and local services – 63% of those living in the outer region prefer express
 - Respondents were split between preference for better connections to the inner core and outer region

- Questions focused on trade-offs:

I would like the rail service to be:

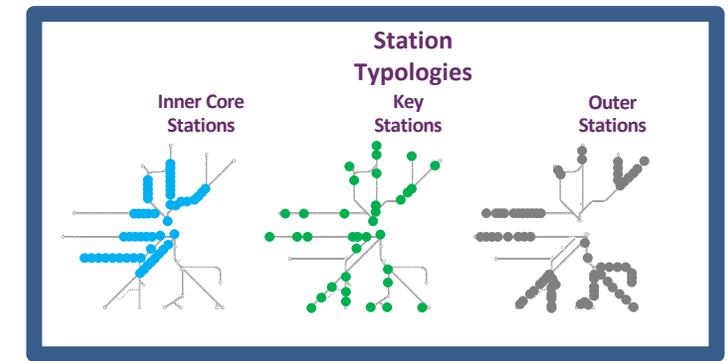


Evaluating Seven Service Alternatives*

- Alternative 1: Optimize Existing System
- Alternative 2: Regional Rail to Key Stations (Diesel)
- Alternative 3: Regional Rail to Key Stations (Electric)
- Alternative 4: Urban Rail (Diesel)
- Alternative 5: Urban Rail (Electric)
- Alternative 6: Full Transformation
- Alternative 7: Hybrid System

** Note: Number and order of alternatives has been recently updated*

Comparing Alternatives



Evaluating relative benefits and costs across the seven alternatives will provide the foundation to build one or more Visions for the future of commuter rail, which may combine features from multiple alternatives to maximize the effectiveness of the MBTA rail network.

Typical Frequency (Peak/Off-Peak)	1: Optimize Existing System	2: Regional Rail to Key Stations (Diesel)	3: Regional Rail to Key Stations (Electric)	4: Urban Rail (Diesel)	5: Urban Rail (Electric)	6: Full Transformation	7: Hybrid System
Key Stations	● 30/60	● 15/15 (North Side) ● 30/30 (South Side)	● 15/15	● 30/60	● 30/60	● 15/15	● 30/60
Inner Core	● 30/60	● 30/60	● 30/60	● 15/15	● 15/15	● 15/15	● 15/30
Outer Stations	● 30/60	● 30/60	● 30/60	● 30/60	● 30/60	● 15/30	● 30/60
Fully Accessible High-Level Platforms							
Key Stations		✓	✓	-	-	✓	✓
Inner Core	Existing or Programmed Upgrades Only	-	-	✓	✓	✓	✓
Outer Stations		-	-	-	-	✓	-
Electrification							
Major Expansions							

Note: The alternatives as described above are subject to change during the modeling process. All text and maps describe a typical application at the system level but may vary to some extent at the line, station, or segment levels.

Alternative 1: Optimize Existing System

Goal:
 Assess costs and benefits of providing predictable, bi-directional service every 30 minutes during peak periods and hourly during off-peak periods, with modest investments in new infrastructure

Key Features

Typical Frequency (Peak/Off-Peak)	All Stations: 30/60 bi-directional
Station Accessibility	High-level boarding platforms at stations where they are currently existing or programmed
Electrification	None
Train Type(s)	Diesel Locomotives
Major Expansions	South Coast Rail Phase 1



Alternative 1: Optimize Existing System – Worcester Line

PEAK HOUR (REPEATING)

TYPE OF SERVICE	Express	Zonal Express	Local	TOTAL PEAK HOUR TRAINS
	FREQUENCY (Min.) Every 70 Min.	Every 30-40 Min.	Every 35 Min.	
Worcester	●	● ●		3
Grafton		● ●		2
Westborough		● ●		2
Southborough		● ●		2
Ashland		● ●		2
Framingham		● ●	● ●	4
West Natick		● ●	● ●	4
Natick Center		● ●	● ●	4
Wellesley Square			● ●	2
Wellesley Hills			● ●	2
Wellesley Farms			● ●	2
Auburndale			● ●	2
W. Newton			● ●	2
Newtonville			● ●	2
Boston Landing			● ●	2
West Station			● ●	2
Lansdowne	●	● ●	● ●	5
Back Bay	●	● ●	● ●	5
South Station	●	● ●	● ●	5
Total Travel Time	67'	83'	57'	

OFF-PEAK HOUR (REPEATING)

TYPE OF SERVICE	Express	Zonal Express	Local	TOTAL OFF-PEAK HOUR TRAINS
	FREQUENCY (Min.) Every 60 Min.	Every 60 Min.	Every 60 Min.	
Worcester	●	●		2
Grafton		●		1
Westborough		●		1
Southborough		●		1
Ashland		●		1
Framingham	●	●	●	3
West Natick		●	●	2
Natick Center		●	●	2
Wellesley Square			●	1
Wellesley Hills			●	1
Wellesley Farms			●	1
Auburndale			●	1
W. Newton			●	1
Newtonville			●	1
Boston Landing			●	1
West Station			●	1
Lansdowne	●	●	●	3
Back Bay	●	●	●	3
South Station	●	●	●	3
Total Travel Time	70'	83'	57'	

Line Level Example

BI-DIRECTIONAL SERVICE

Legend

- Station Stop
- Framingham Existing Station
- West Station Proposed New Station
- Hourly Service

INFRASTRUCTURE REQUIREMENTS

- Platforms on both tracks at West Newton, Newtonville, and Auburndale
- Additional infrastructure at Worcester Station to support increased frequency

OPERATING TRADEOFFS

- Including the Heart-to-Hub hourly provides a repeating, pulse schedule with above-typical service to Worcester, but increases equipment usage and operating costs
- Today's zonal express patterns are maintained, but due to limited capacity on the line and at South Station, most stations would receive 35-minute peak frequencies (consistent with previous optimization work)

Alternative 1: Optimize Existing System – Capital Improvements

Stations

- Accessibility Upgrades
- Additional Platform/Track Capacity

Tracks

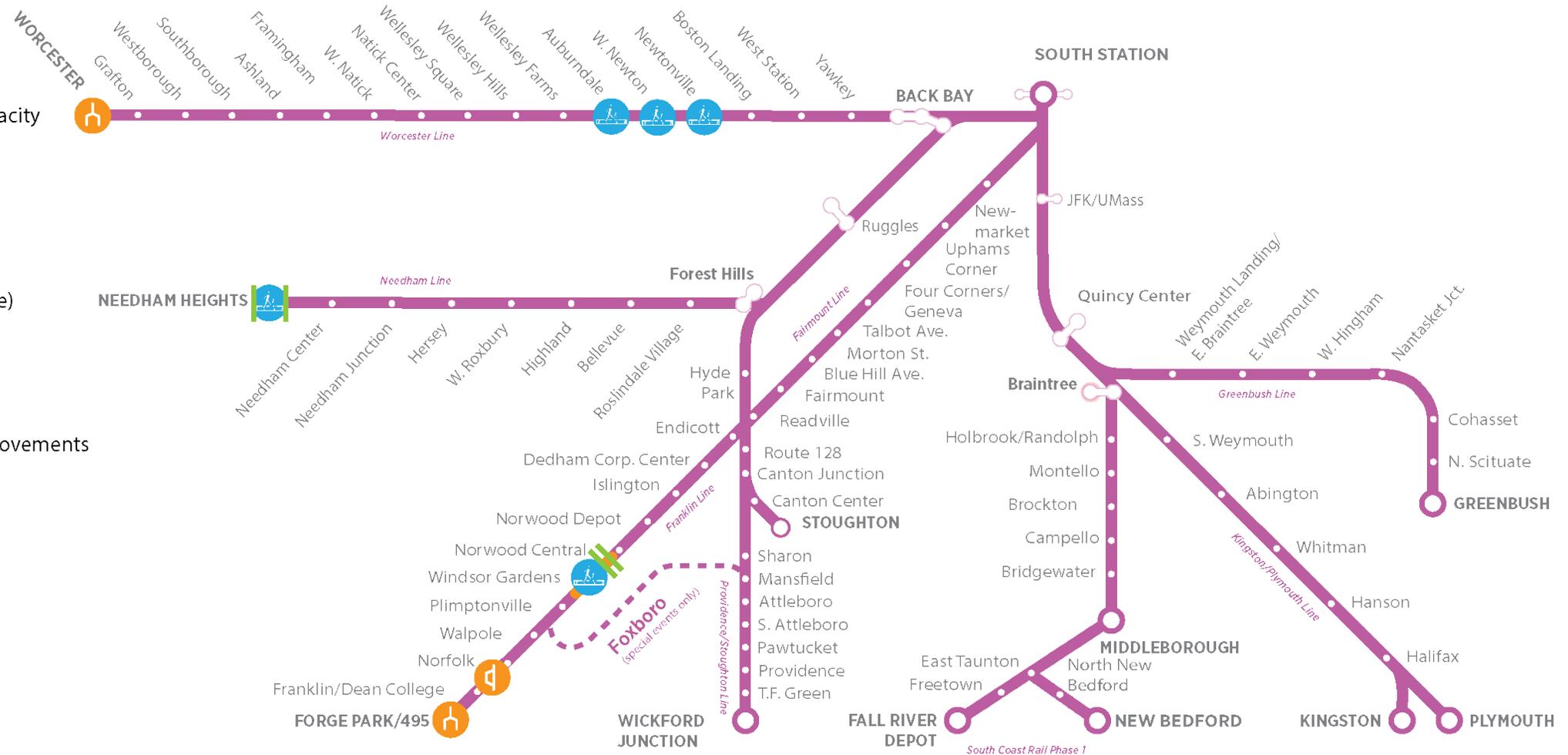
- Turn tracks
- Passing Sidings
- Additional Track (Double, Triple)

Other Improvements

- Electrification
- Grade Crossing or Bridge Improvements

Terminal Improvements

- Terminal Upgrade
- Terminal Expansion
- North South Rail Link



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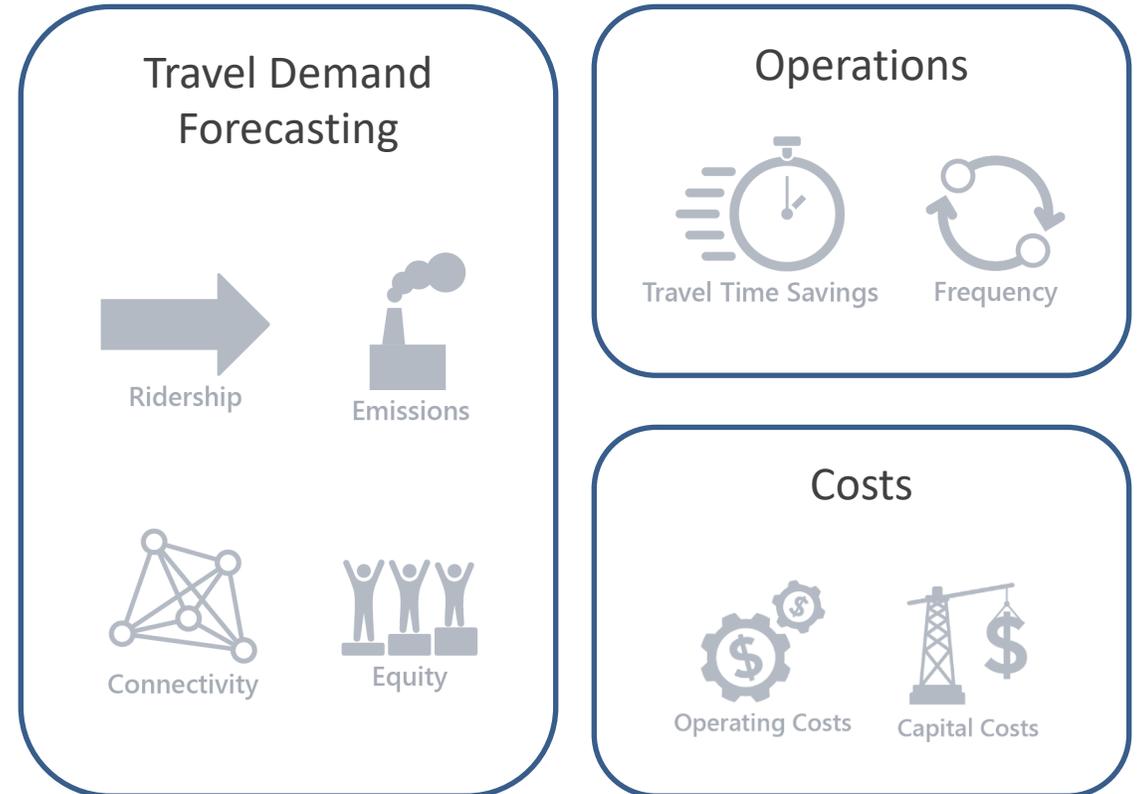
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Key Results

- Results will be summarized:
 - By alternative
 - For each line (for some metrics)
- Understand for each alternatives:
 - Operations (frequency, travel times, etc.)
 - Infrastructure required
 - Fleet requirements
 - Ridership
 - Costs
 - Benefits (emissions, equity, connectivity)



Issues to Highlight for FMCB



Rail Vision team is balancing investment needed to meet frequency targets:

- South side frequencies without South Station Expansion
- Low ridership stations require major investment
- Transfers required for some Old Colony lines to deliver higher frequency service
- Interlining creates new connections and takes away others
- Target frequencies are adjusted on branches
- Urban Rail service uses a combination of locomotives running the full length of the line and dedicated multiple units

Rail Vision Timeline for FMCB Engagement

	July	September	December	January and Beyond
Alternatives 1 – 3: Ridership + capital and operating implications				
Alternatives 4 – 7: Ridership + capital and operating implications				
Final recommendations				
Incorporate outcomes into operating contract, capital planning				

Recommendations should identify key capital investments shared across multiple alternatives and a desired end state.

How does the FMCB want to review the analysis results?

- One alternative per meeting, starting with July meeting
- Review entire package of results and use more time at a single special meeting to address questions

Does the FMCB need any additional information beyond operations analysis (and resulting high-level capital and operating costs) and ridership modeling?