

#### Advisory Committee Meeting

**DECEMBER 13, 2018** 

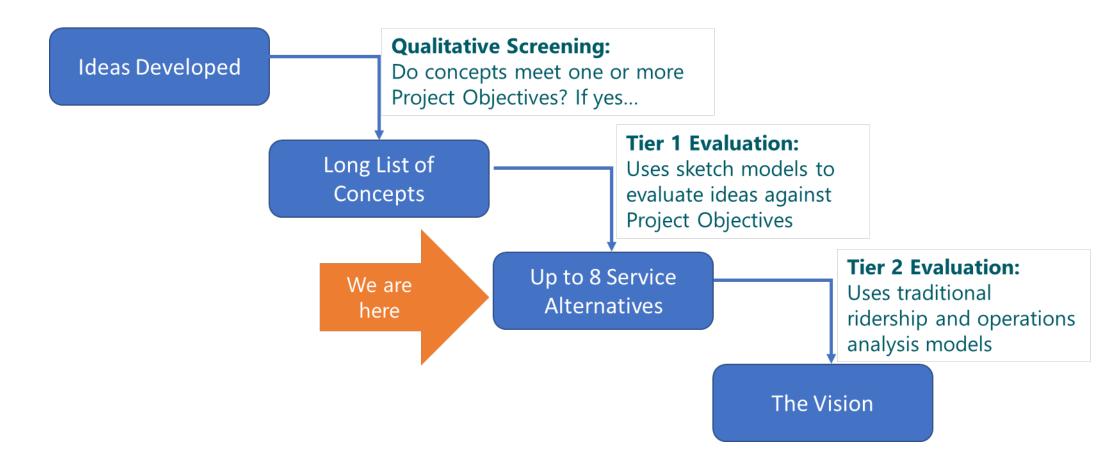


### Purpose of Today's Meeting

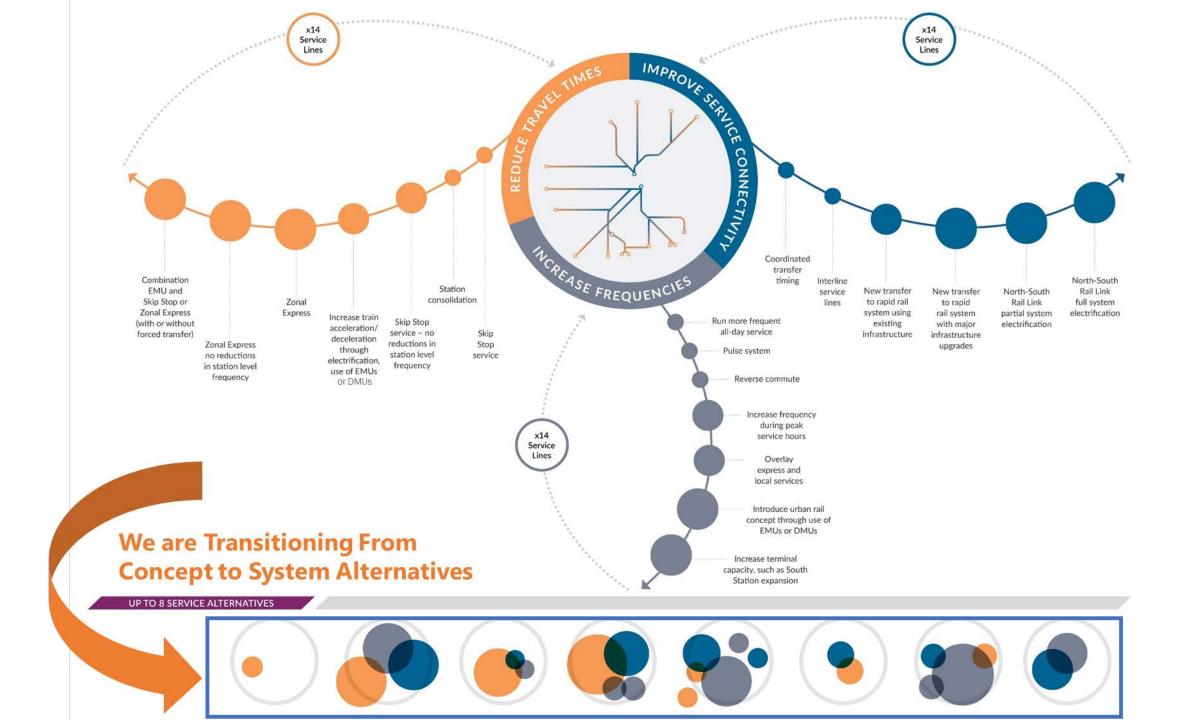
- 1. Welcome
- 2. Potential Service Alternatives
- 3. Other Updates
- 4. Public Comment



#### **Evaluation Process**









Potential Tier 2 Service Alternatives



#### Purpose of Today's Discussion

- Presentation of initial six systemwide alternatives
- Team is still developing additional alternatives that include line by line optimization based on Tier 1 analysis
- Feedback from Advisory Committee and FMCB (meeting on 12/17) will be incorporated into an updated set of alternatives, which will be presented at January's Advisory Committee and FMCB meetings



### Development of Tier 2 Alternatives

The proposed service alternatives for Tier 2 are informed by

- What we learned from the Tier 1 analysis
- What we heard from the Advisory Committee





### Elements Common to All Alternative Elements

- ✓ More frequent, bi-directional service
- ✓ Infrastructure necessary to support service alternative will be in place
- ✓ Signal upgrades will support service plans (including Positive Train Control system-wide)
- ✓ West Station
- √ Haverhill/Lowell Interlining
- ✓ Franklin/Fairmount Interlining



### Variable Elements in Alternatives

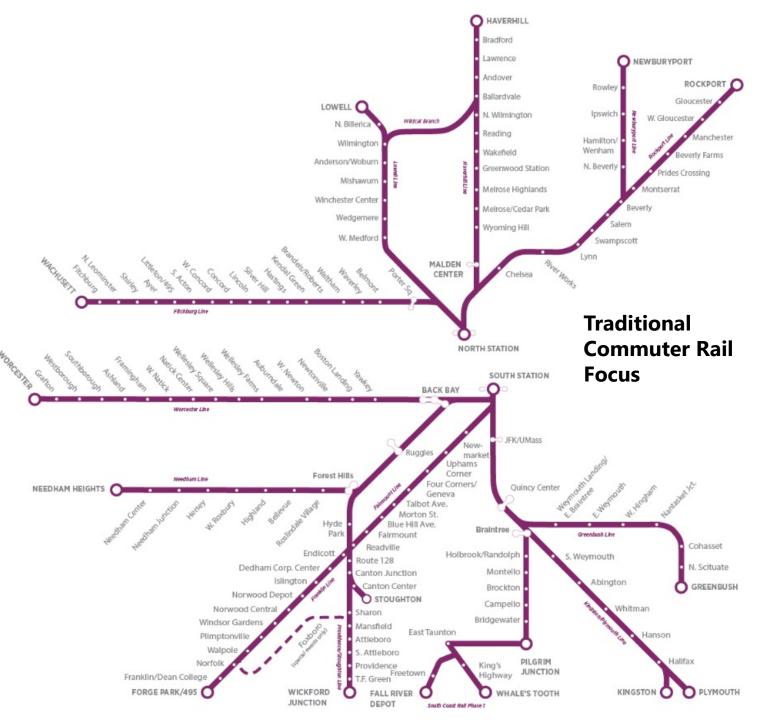
- Service Focus (Key Stations, Inner Core)
- > Frequency (15, 30, 60 minutes)
- ➤ Electrification (Full, Partial, None)
- ➤ Rolling Stock (Electric, Diesel, Multiple Units)
- ➤ Terminal Capacity (North-South Rail Link (NSRL), South Station Expansion (SSX), Existing)
- System Expansions (South Coast Rail (SCR) Phase 1, SCR Full Build, Grand Junction, Foxboro)
- > Additional Interlining
- > Station Accessibility



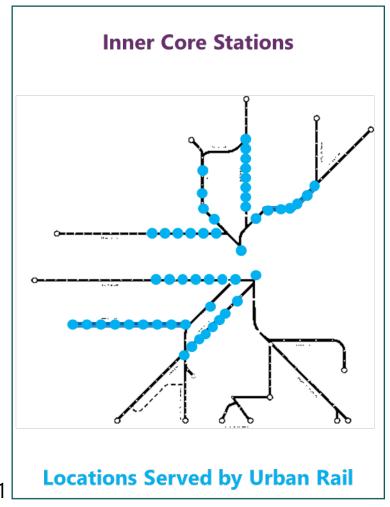
#### The System of To

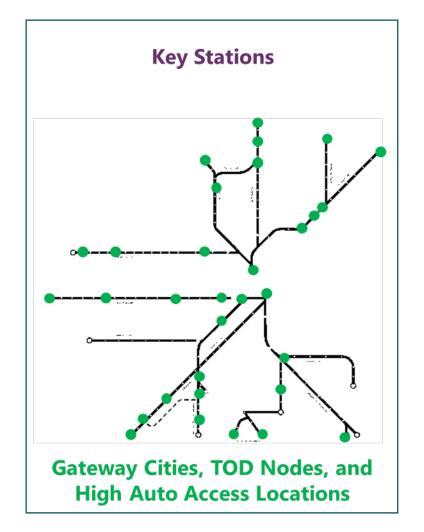
Today's system is largely local service gear trips into downtown Boston. Some Express operates on longer lines.

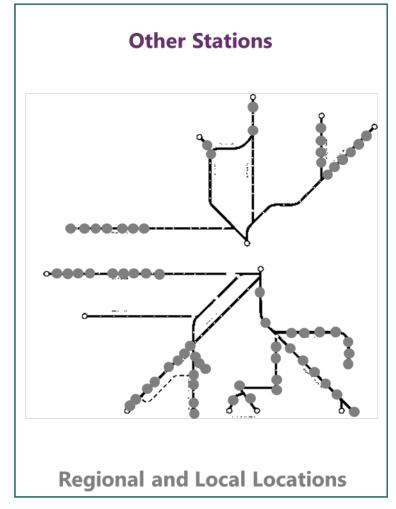
What Exists Todayor in	n the Very Near Future
Typical Frequency	20/60 peak direction
Electrification:	None (Amtrak only)
Rolling Stock	Diesel locomotives (Continual investments)
Terminals:	Existing (North Station, South Station), with North Station capacity upgrades
System Expansions:	N/A
Committed New or Upgraded Stations:	Blue Hill Ave. (Fairmount) Pawtucket (Providence) SCR Phase 1 stations Other station upgrades
Interlining	Haverhill/Lowell (2 trips/day)
Station Accessibility	Mixed



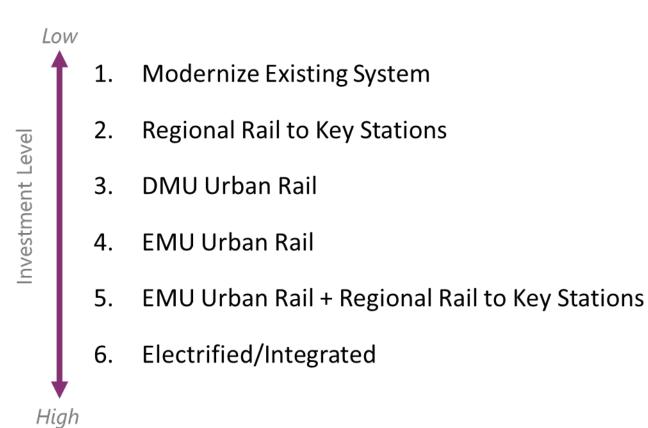
# How the Alternatives Address...**Station Typologies**





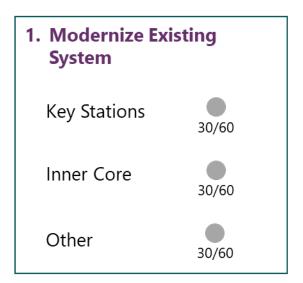


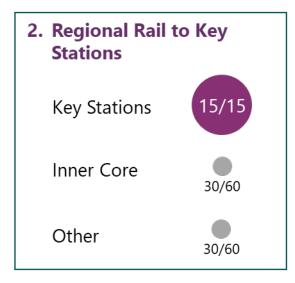
#### Potential Tier 2 Service Alternatives

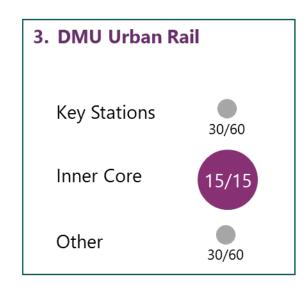




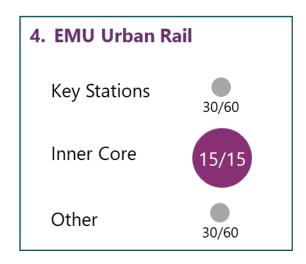
# How the Alternatives Address...**Frequency**

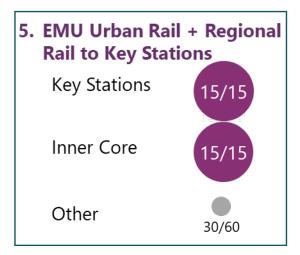


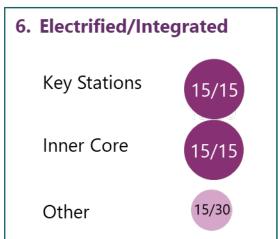


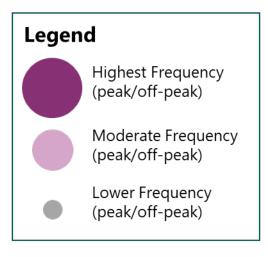




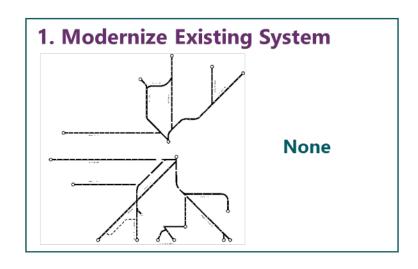


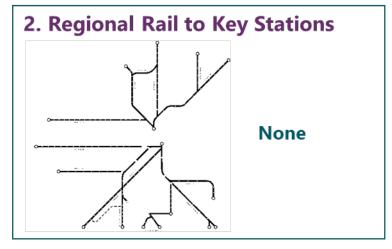


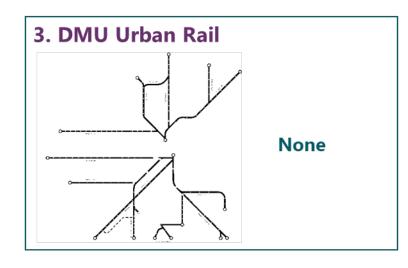


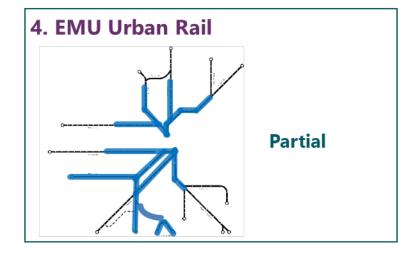


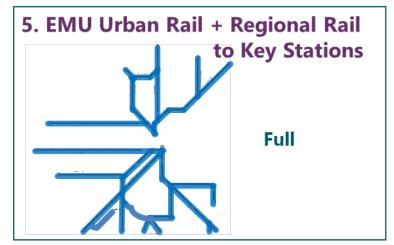
### How the Alternatives Address...**Electrification**

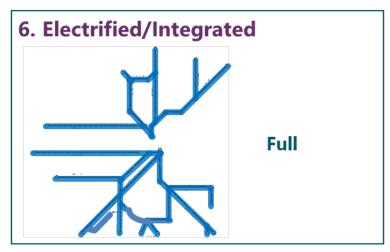




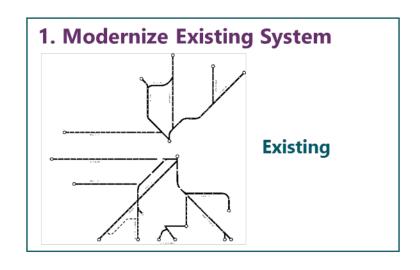


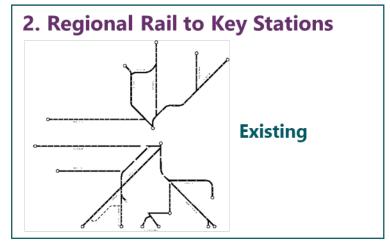


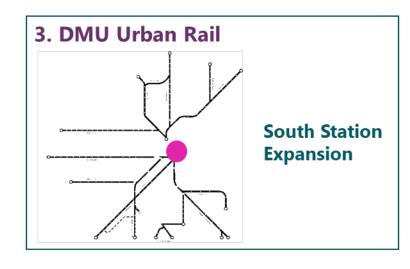


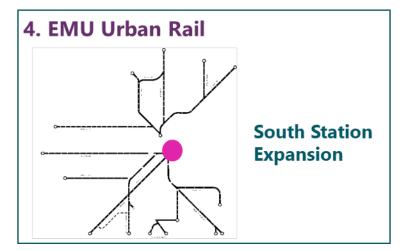


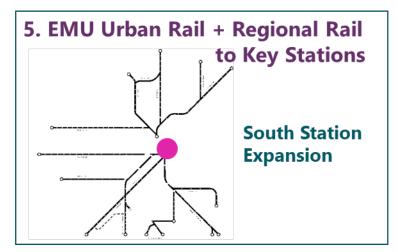
# How the Alternatives Address...**Terminal Capacity**

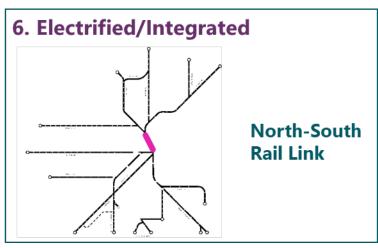




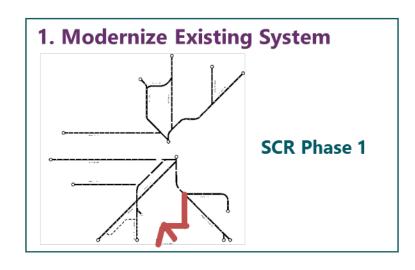


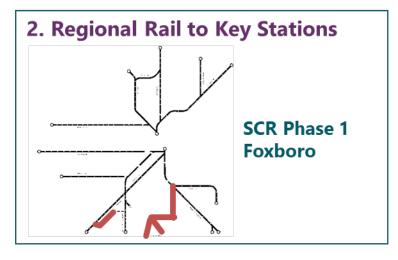


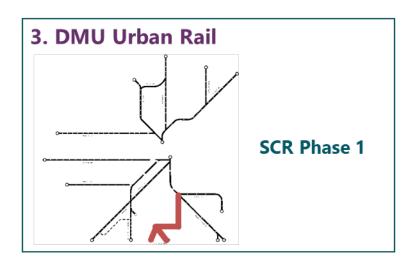


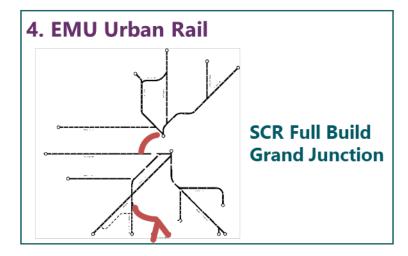


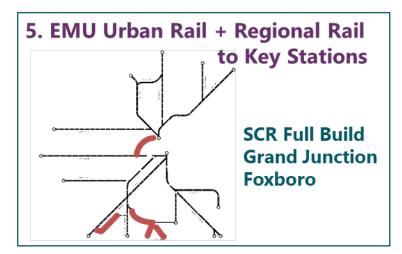
# How the Alternatives Address...System Expansion

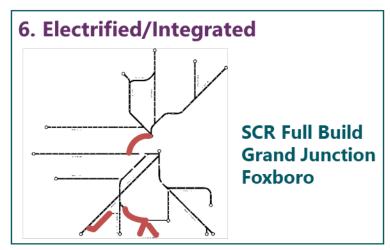




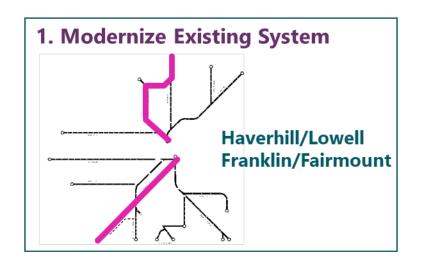


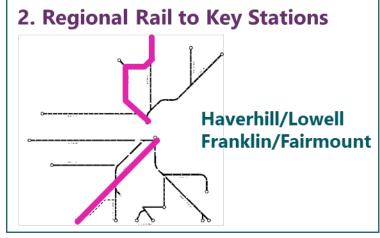


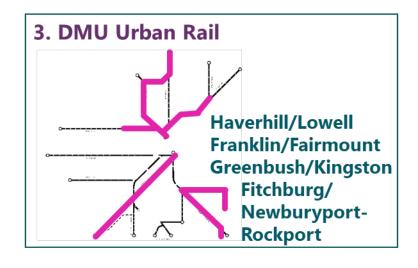


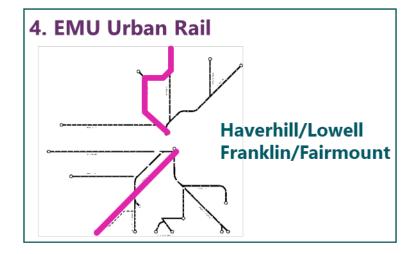


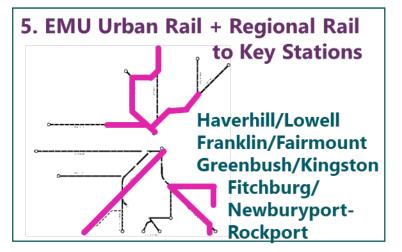
# How the Alternatives Address...Interlining

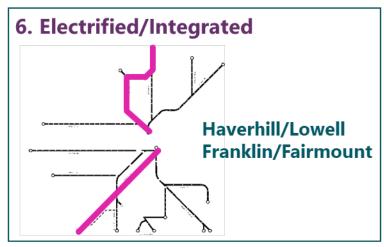




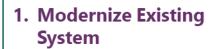








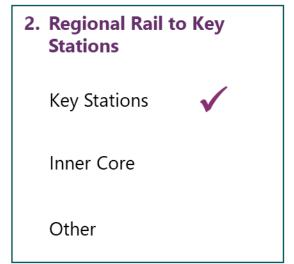
## How the Alternatives Address...Station Accessibility

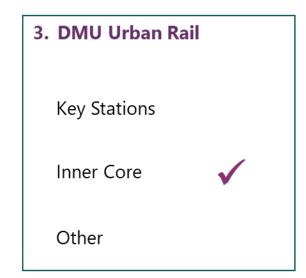


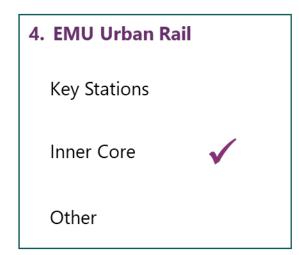
**Key Stations** 

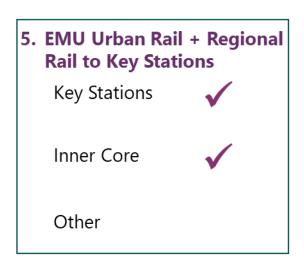
Inner Core

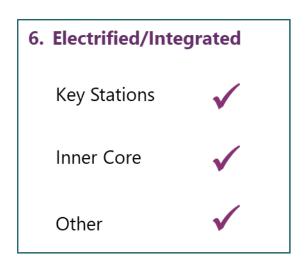
Other











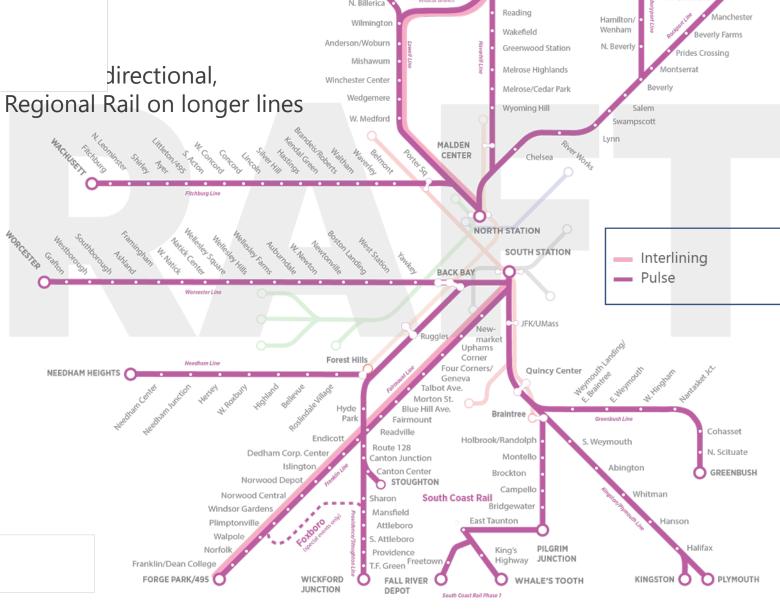


Accessibility upgrades would be done to be consistent with PATI program prioritization.

### Service Alternative #1: Modernize

Maximizes functionali directional, predictable, consistent pulse service and Regional Rail on longer lines

<b>Key Features</b>		
Typical Frequency	Key Stations: 30/60 bi-directional Inner Core: 30/60 bi-directional Other Stations: 30/60 bi-directional	
Electrification	None	
Rolling Stock	Diesel Locomotive	
Terminals	Existing	
System Expansions	SCR Phase 1	
Interlining	Haverhill/Lowell Franklin/Fairmount	
Station Accessibility	Existing or Programmed	



LOWELL (

HAVERHILL
 Bradford
 Lawrence

Andover

Ballardvale

N. Wilmington

NEWBURYPORT

Rowley

Ipswich

ROCKPORT C

Glouceste

W. Gloucester

Service Alternative #2: Regional Ra

Maximizes functionali

predictable, consistent pulse service and Regional Rail on longer lines

and capacit	ty to support added frequenc	Lynn  Chelsea  Chelsea  Chelsea  Chelsea
Key Features		Filchburg Line Sullivan Square
Typical Frequency	Key Stations: 15/15 bi-directional Inner Core: 30/60 bi-directional Other Stations: 30/60 bi-directional	Key Station  South Station  Interlining  Pulse
Electrification	None	Worcester Line PullSE
Rolling Stock	Diesel Locomotive	New- ₩ JFK/UMass
Terminals	Existing	Ruggles market Uphams Corner Corner National Corner
System Expansions	SCR Phase 1 Foxboro	NEEDHAM HEIGHTS  NEEDHAM HEIGHTS  Ouincy Center  Geneva  Talbot Ave.  Morton St.  Blue Hill Ave.  Blue Hill Ave.
Interlining	Haverhill/Lowell Franklin/Fairmount Greenbush/Ki Fitchburg/Ne	Readville  Endicott  Endicott  Dedham Corp. Center Islington Norwood Depot  Norwood Central  Norwood Central
Station Accessibility	Key Static	Windsor Gardens Plimptonville Walpole Norfolk Franklin/Dean College  Windsor Gardens Plimptonville Franklin/Dean College  Windsor Gardens Plimptonville Attleboro S. Attleboro Providence Providence T.F. Green Freetown  Windsor Gardens Frieddewater Franklin/Dean College  Mansfield East Taunton  East Taunton  King's Highway JUNCTION  Hanson  Halifax
		FORGE PARK/495 WICKFORD FALL RIVER DEPOT South Coast Rail Phase 1

directional,

HAVERHILL Bradford Lawrence

Andover

LOWELL

N. Billerica

Anderson/Woburn

Winchester Center

Wilmington

Mishawum

Wedgemere W. Medford Ballardvale

N. Wilmington

Wakefield

Greenwood Station

Melrose Highlands

Melrose/Cedar Park

NEWBURYPORT

W. Gloucester

Rowley

Ipswich

Hamilton/

Wenham

N. Beverly

wampscott

ROCKPORT

Glouceste

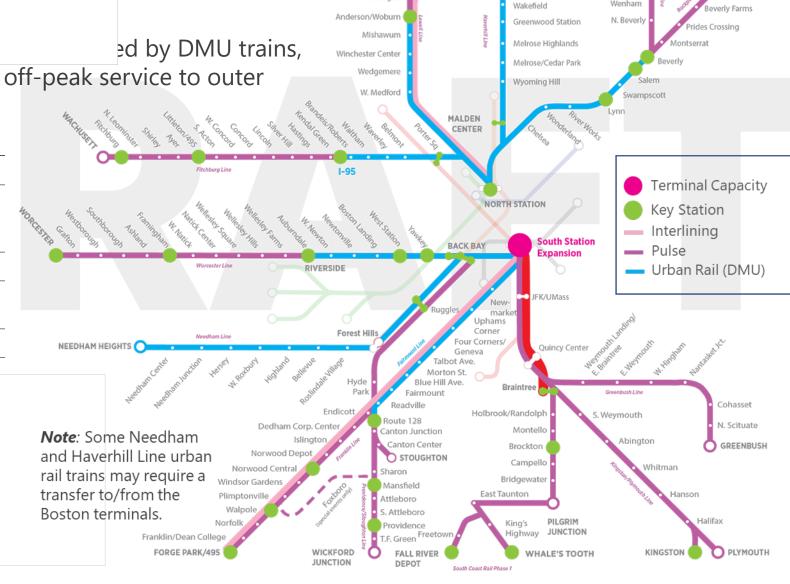
Service Alternative #3: DMU Urbar

All-day frequent servi

supported by frequent peak and hourly off-peak service to outer

stations, with South Station Expansion

<b>Key Features</b>					_
Typical Frequency	Key Station: Inner Core: Other Statio	15/15 bi	-directiona	ıl	
Electrification	None				
Rolling Stock	DMUs Diesel Loco	motive			
Terminals	South Statio	on Expan	sion		
System Expansions	SCR Phase	1			
Interlining	Haverhill, Franklin/l				
Station Accessibility	Inner Cor				



LOWELL

N. Billerica

Wilmington

HAVERHILI Bradford Lawrence

Andover

I-93

N. Wilmington

Reading

NEWBURYPORT

W. Gloucester

Rowley

Ipswich

Hamilton/

Wenham

ROCKPORT

Glouceste

Service Alternative #4: EMU Urban

All-day frequent servi

supported by frequent peak and hourly off-peak service to outer

stations, with South Station Expansion

CENTER **Key Features Terminal Capacity** Typical Key Stations: 30/60 bi-directional rand Junction NORTH STATION **Key Station** Inner Core: 15/15 bi-directional Frequency Interlining Other Stations: 30/60 bi-directional Pulse Expansion Electrification Urban Rail Urban Rail (EMU) Providence Line Electrification FK/UMass SCR Full Build Rolling Stock **EMUs** Quincy Center **Diesel Locomotive** South Station Expansion **Terminals** Braintree Cohasset System SCR Full I Holbrook/Randolph . Weymouth N. Scituate Dedham Corp. Center **Expansions** Grand Ju Montello **Note:** Some Needham Abington Brockton GREENBUSH and Haverhill Line urban Norwood Depot Interlining Haverhill, Campello Whitman rail trains may require a Franklin/I transfer to/from the Plimptonvil Station Inner Cor S. Attleboro Boston terminals. Halifax Accessibility Franklin/Dean College FORGE PARK/495 WICKFORD BATTLESHIP O

ed by EMU trains,

HAVERHILL
Bradford
Lawrence

Andover

1-93

N. Wilmington

Reading

Wakefield

Greenwood Station

Melrose Highlands

Melrose/Cedar Park

Wyoming Hill

MALDEN

LOWELL

Anderson/Woburn

Winchester Center

N. Billeric

Wilmington

Mishawum

Wedgemere

W. Medford

NEWBURYPORT

W. Gloucester

Ipswich

Hamilton/

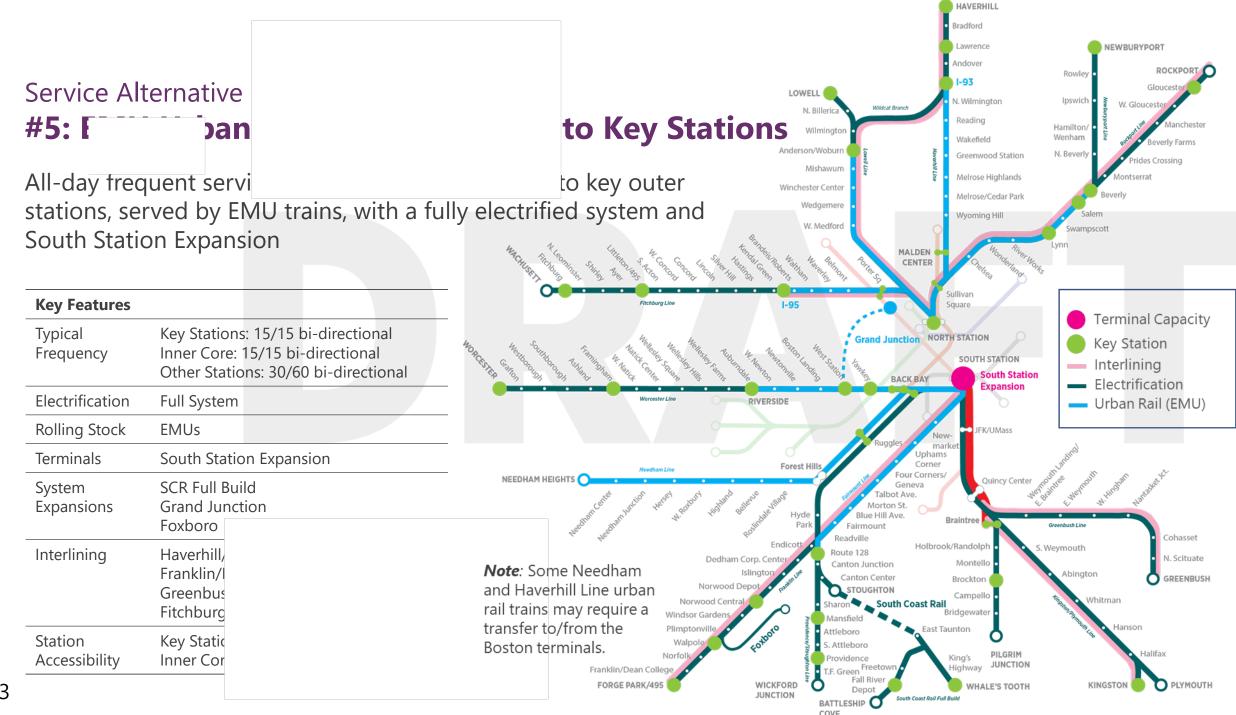
Wenham

N. Beverly

wampscott

ROCKPORT

Glouceste



Bradford Lawrence NEWBURYPORT Andover ROCKPORT I-93 Service Alternative Gloucest LOWELL N. Wilmington Ipswich W. Glouceste N. Billerio #6: Electrified/ Reading Hamilton Wilmingto Wenham Wakefield Anderson/Woburn N. Beverly Greenwood Station Mishawum Full system electrificat ban Rail in the Melrose Highlands Winchester Center Melrose/Cedar Park inner core communities and Regional Rail for longer lines. Wedgemere Wyoming Hill W. Medford MALDEN CENTER **Key Features** NORTH STATION Typical Key Stations: 15/15 bi-directional **Key Station** Inner Core: 15/15 bi-directional North-South Rail Lin Frequency SOUTH STATION Interlining Other Stations: 15/30 bi-directional Electrification Electrification Full System Urban Rail (EMU) RIVERSIDE Rolling Stock **EMUs Terminals** North-South Rail Link Quincy Center System SCR Full Build **Grand Junction Expansions** Braintree Foxboro Cohasset Holbrook/Randolph Weymouth Haverhill/Lowe Interlining Dedham Corp. Center N. Scituate Montelle **Note**: Some Needham Franklin/Fairm Abington GREENBUSH Brockton Norwood Depot and Haverhill Line urban Urban Rail/Urk Campello rail trains may require a Station All Stations Se transfer to/from the Accessibility Boston terminals. S. Attleboro Halifax Franklin/Dean College FORGE PARK/495 WICKFORD JUNCTION

HAVERHILL

BATTLESHIP O

## Summary of Proposed Service Alternatives for Tier 2

	Non-Electrified Alternatives			Electrified Alternatives		
Alternative	1. Modernize Existing System	2. Regional Rail to Key Stations	3. DMU Urban Rail	4. EMU Urban Rail	5. EMU Urban Rail + Regional Rail to Key Stations	6. Electrified/ Integrated
Investment Level	Lowest					Highest
Typical Frequency (peak/off-peak)	30/60 Key Stations 30/60 Inner Core 30/60 Other	15/15 Key Stations 30/60 Inner Core 30/60 Other	30/60 Key Stations 15/15 Inner Core 30/60 Other	30/60 Key Stations 15/15 Inner Core 30/60 Other	15/15 Key Stations 15/15 Inner Core 30/60 Other	15/15 Key Stations 15/15 Inner Core 15/30 Other
Electrification	None	None	None	Partial System - Urban Rail - Providence Line - SCR Full Build	Full System	Full System
Rolling Stock	Diesel Locomotive	Diesel Locomotive	DMUs Diesel Locomotive	EMUs Diesel Locomotive	EMUs	EMUs
Terminals	Existing	Existing	SSX	SSX	SSX	NSRL
System Expansion	SCR Phase 1	SCR Phase 1 Foxboro	SCR Phase 1	SCR Full Build Grand Junction	SCR Full Build Grand Junction Foxboro	SCR Full Build Grand Junction Foxboro
Interlining	Haverhill/Lowell Franklin/Fairmount	Haverhill/Lowell Franklin/Fairmount Greenbush/Kingston Fitchburg/ Newburyport-Rockport	Haverhill/Lowell Franklin/Fairmount	Haverhill/Lowell Franklin/Fairmount	Haverhill/Lowell Franklin/Fairmount Greenbush/Kingston Fitchburg/ Newburyport-Rockport	Haverhill/Lowell Franklin/Fairmount Urban Rail/Urban Rail
Station Accessibility	Existing or Programmed	Key Stations	Inner Core	Inner Core	Key Stations Inner Core	All Stations

### Glossary of Terms

Term	What We Learned
Bi-Directional	<ul> <li>Services serve both inbound to Boston and outbound to regions in a similar pattern (could be useful to support reverse commute opportunities).</li> </ul>
Electrification	<ul> <li>Converting track sections and upgrading the train fleet so that service is powered by electricity, and not by diesel locomotive. This can be done systemwide, for individual rail lines, or for a portion of a rail line.</li> </ul>
Inner Core Station	<ul> <li>Stations in densely populated areas around Boston (typically within Route 128) that are prioritized under Urban Rail alternatives.</li> </ul>
Interlining	<ul> <li>Lines or track sections that are shared by more than one rail line or branch, to increase capacity by rerouting away from downtown terminals or create new connections between lines.</li> </ul>
Key Station	<ul> <li>Station which, for reasons of demand, current ridership, connections, or other reasons, is expected to receive higher levels of service than other stations in the system.</li> </ul>
Pulse	<ul> <li>Frequent, predictable service (such as bi-hourly, quarterly), with trains moving in both directions at equal frequency. This would present a more set schedule and, in some cases, a substantial increase in frequency.</li> </ul>
Terminal	• The end point of a rail line. In the context of this presentation, "terminal" refers to the shared end points of all rail lines in downtown Boston.