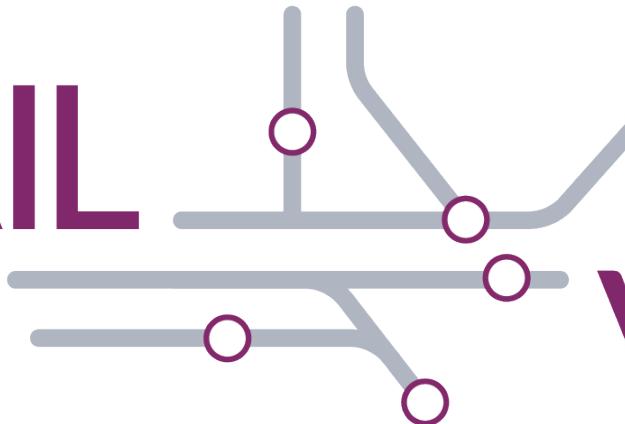




RAIL



VISION

## Fiscal and Management Control Board Presentation

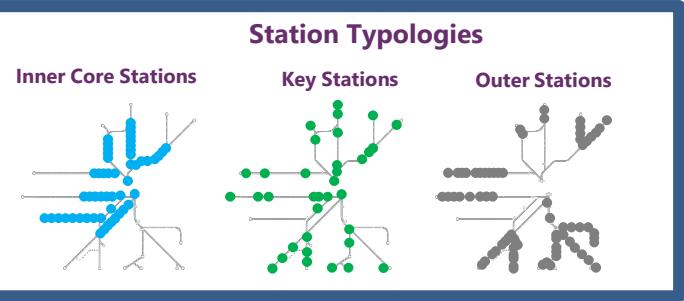
NOVEMBER 4, 2019



# Review of Operations Assumptions

Service Assumptions	Operations Assumptions
<b>On-time performance goal:</b> 92%	<b>O&amp;M unit costs:</b> Based on current MBTA cost data, with the exception of electrified service and DMUs (based on experience from other US agencies)*
<b>Span of service:</b> 6 AM to 12 AM	<b>Staffing:</b> Average number of staff per train, based on today's staffing requirements
<b>Service levels:</b> Bidirectional, at least hourly all day	<b>Maximum speeds:</b> 79 mph, with the exception of SCR Full Build (100 mph)
<b>Amtrak service:</b> Based on future NEC service plan, NEC service to include 1 Acela and 1 regional per hour per direction; 7 daily Downeaster round trips	<b>Turn times:</b> 15-minute minimum for long-distance trips and 10-minute minimum for urban rail trips (both times include recovery)
<b>PTC:</b> Installed on all lines	<b>Midday servicing:</b> Required for diesel-powered trains but not electric-powered trains
<b>Platform accessibility:</b> Defined by alternative, with high-level platforms resulting in lower dwell times	<b>Spare ratios:</b> Assumed to be 20% for most fleet types (higher for DMUs and small fleets)

# Review of Alternatives



	1: Higher Frequency Commuter Rail	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
<b>Typical Frequency (Peak/Off-Peak)</b>						
Key Stations	30/60	15/15 (North Side) 30/30 (South Side)	15/15	30/60	30/60	15/15
Inner Core	30/60	30/60	30/60	15/15	15/15	15/15
Outer Stations	30/60	30/60	30/60	30/60	30/60	15/15
<b>Fully Accessible High-Level Platforms</b>						
Key Stations	Existing or Programmed Upgrades Only	✓	✓	-	-	✓
Inner Core	Existing or Programmed Upgrades Only	-	-	✓	✓	✓
Outer Stations	Existing or Programmed Upgrades Only	-	-	-	-	✓
<b>Parking Modeled as Unconstrained</b>						
Most Key Stations	Parking Modeled Fully Constrained	✓	✓	-	-	✓
Urban Rail Termini	Parking Modeled Fully Constrained	-	-	✓	✓	✓
Non-Rapid Transit Stations with >50 Spaces	Parking Modeled Fully Constrained	-	-	-	-	✓
<b>Electrification</b>						
<b>Major Expansions</b>						

Evaluating relative benefits and costs across the 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.

## O&M Costs and Revenues in Alternatives 1-6

- Each alternative results in a change in systemwide revenue and commuter rail O&M costs
- Revenue increases are due to ridership gains, which are partially offset by shifts from higher zone stations to lower zone stations (due to the differences across stations in frequency, unconstrained parking, or fares)
- Systemwide revenues do not account for non-fare revenue sources (e.g., parking)
- O&M costs do not reflect potential changes in O&M costs on other modes (e.g., bus, rapid transit)

<b>Annualized Increase/Year (in 2020\$)</b>	<b>Alternative 1:</b> Higher Frequency Commuter Rail	<b>Alternative 2:</b> Regional Rail to Key Stations (Diesel)	<b>Alternative 3:</b> Regional Rail to Key Stations (Electric)	<b>Alternative 4:</b> Urban Rail (Diesel)	<b>Alternative 5:</b> Urban Rail (Electric)	<b>Alternative 5:</b> Urban Rail (Electric) with Modified Fares	<b>Alternative 6:</b> Full Transformation
Incremental MBTA Systemwide Revenues	\$29M/Year	\$52M/Year	\$52M/Year	\$58M/Year	\$48M/Year	\$15M/Year	\$80M/Year
Incremental MBTA Commuter Rail O&M Costs	\$130M/Year	\$379M/Year	\$439M/Year	\$333M/year	\$304M/year	\$304M/year	\$643M/year

## Parking Capacity and Demand in Alternatives 1-6

- Ridership increases are partially driven by unconstrained parking for Alternatives 2-6
- Drive access boardings increase in all alternatives
- Drive access comparison to existing capacity demonstrates a need for additional parking to support the projected ridership

	<b>Approximate Existing Parking Availability</b>	<b>Alternative 1:</b> Higher Frequency Commuter Rail	<b>Alternative 2:</b> Regional Rail to Key Stations (Diesel)	<b>Alternative 3:</b> Regional Rail to Key Stations (Electric)	<b>Alternative 4:</b> Urban Rail (Diesel)	<b>Alternative 5:</b> Urban Rail (Electric)	<b>Alternative 6:</b> Full Transformation
Daily Drive Access Boardings (2040)	~43,000 Spaces Exist Today (Includes both Public and Private)	98,100	103,000	112,200	105,400	103,100	187,200
Additional Parking Spaces Required*		~10,000	~15,000	~21,000	~16,000	~16,000	~45,000

**Note:** Parking capacities were estimated for each station based on the Boston MPO 2012-13 *Inventory of Park-and-Ride Lots at MBTA Facilities*, and was updated based on the MBTA website and further review. Station-level estimates include MBTA facilities as well as municipal and private facilities. Station-level estimates were aggregated to the line-level and compared to line-level drive access boardings, assuming that every two drive access boardings (one inbound and one outbound boarding) requires one parking space. This results in a conservative estimate of the additional parking spaces required as it does not account for potential kiss-and-ride boardings included in the drive access totals, and assumes all drive access boardings are in single-occupancy vehicles. For Alternative 6, drive access boardings on trips traveling through the North South Rail Link were distributed to the line level based on the period-level directional ridership.

# Comparison of Alternatives 1-6 – Preliminary Results

	Alternative 1: Higher Frequency Commuter Rail	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 5: Urban Rail (Electric) with Modified Fares	Alternative 6: Full Transformation
2040 Ridership (compared to No-Build)	+ <b>19,000</b> daily CR boardings (+13%)	+ <b>36,200</b> daily CR boardings (+24%)	+ <b>52,900</b> daily CR boardings (+35%)	+ <b>80,400</b> daily CR boardings (+53%)	+ <b>81,600</b> daily CR boardings (+54%)	+ <b>99,000</b> daily CR boardings (+66%)	+ <b>225,900</b> daily CR boardings (+150%)
Assumptions:							
-Fare Structure	+5,300 drive access +13,700 walk access	+10,200 drive access +26,000 walk access	+19,400 drive access +33,500 walk access	+12,600 drive access +67,800 walk access	+10,300 drive access +71,300 walk access	+20,000 drive access +79,000 walk access	+94,400 drive access +131,500 walk access
-Parking	+ <b>9,200</b> new linked transit trips in system	+ <b>21,200</b> new linked transit trips in system	+ <b>35,800</b> new linked transit trips in system	+ <b>47,500</b> new transit trips in system	+ <b>47,500</b> new transit trips in system	+ <b>59,100</b> new transit trips in system	+ <b>122,400</b> new transit trips in system
Fleet Needs	Diesel Locomotives Bi-Level Cab Cars/Coaches	Locomotives Bi-Level Cab Cars/Coaches	Bi-level EMUs	Diesel Locomotives Bi-Level Cab Cars/Coaches Single-Level DMUs	Locomotives Bi-Level Cab Cars/Coaches Bi-Level EMUs	Locomotives Bi-Level Cab Cars/Coaches Bi-Level EMUs	Bi-Level EMUs
Preliminary Capital Costs (2020\$/ 2030\$)	<b>\$1.7B</b> (2020\$)/ <b>\$2.3B</b> (2030\$)	<b>\$4.5B</b> (2020\$)/ <b>\$6.3B</b> (2030\$)	<b>\$17.9B</b> (2020\$)/ <b>\$25.2B</b> (2030\$)	<b>\$8.9B</b> (2020\$)/ <b>\$12.6B</b> (2030\$)	<b>\$10.6B</b> (2020\$)/ <b>\$14.9B</b> (2030\$)	<b>\$10.6B</b> (2020\$)/ <b>\$14.9B</b> (2030\$)	<b>\$28.9B</b> (2020\$)/ <b>\$40.7B</b> (2030\$)
Incremental MBTA Systemwide Revenues (2020\$)	<b>\$29M</b> /Year	<b>\$52M</b> /Year	<b>\$52M</b> /Year	<b>\$58M</b> /Year	<b>\$48M</b> /Year	<b>\$15M</b> /Year	<b>\$80M</b> /Year
Incremental MBTA Commuter Rail O&M Costs (2020\$)	<b>\$130M</b> /Year	<b>\$379M</b> /Year	<b>\$439M</b> /Year	<b>\$333M</b> /year	<b>\$304M</b> /year	<b>\$304M</b> /year	<b>\$643M</b> /year

## Ongoing Efforts and Next Steps

- Consultant Contract for Rail Vision complete in February 2020.
  - Final documentation and implementation plan forthcoming.
- MBTA Pilot Programs include submissions for rail-related service changes.
- MassDOT Planning and MBTA Systemwide Station Access Study to provide a framework for Access Management Strategy and decision support tool. Expected to be complete June 2020.
- Findings on study on MBTA Commuter Rail fares due to the legislature March 2020. Scope includes the zone structure and possibilities for reverse commute and off-peak pricing.
- In addition, MBTA continues to study low-income fares that includes commuter rail tickets. Report back to FMCB on progress in December 2019.