

Public Transportation Priorities

More operational funding for MBTA

Line-by-line rail improvement plan

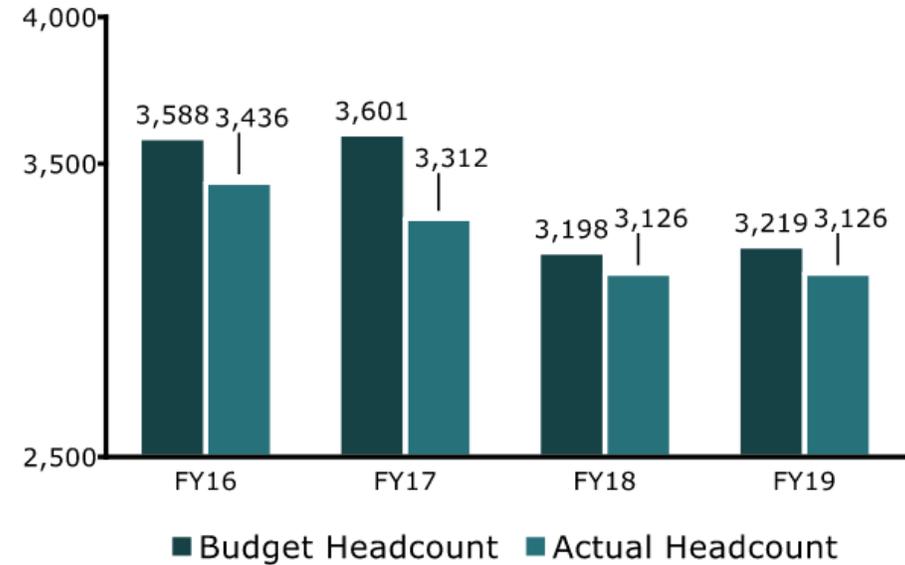
Next: Worcester and Fitchburg line solutions

MBTA capital spending is up dramatically, but operating expenses have been held down.

Construction Work in Progress



Operating Positions Excluding Bus Transportation Budget vs Actual



Sources: Audited Financial Statements; MBTA Board Presentation, April 8, 2019;

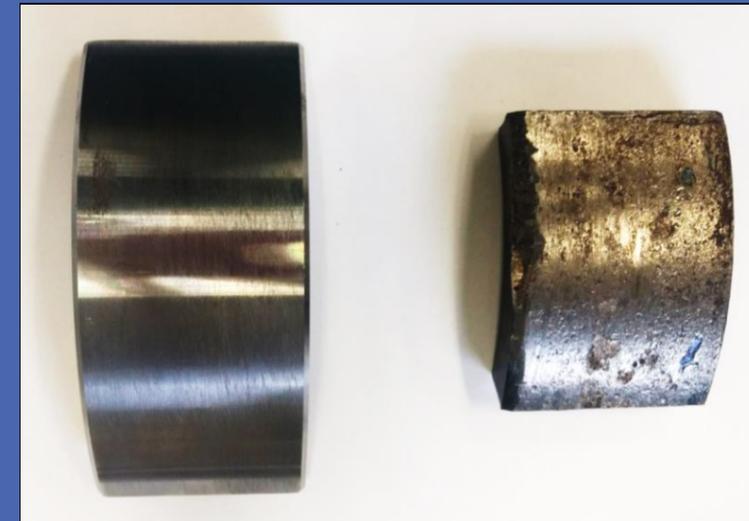
Undermanagement of maintenance

Critical [Preventative Maintenance and Inspections] are not taking place as required. . .

[D]ue to shortage of and/or inexperienced leadership, competing priorities and fiscal controls, operational managers have had difficulty identifying what maintenance and inspections need to be done, or have been dropped due to fiscal pressures or lack of staffing.

Safety Review Panel, Final Report, December 9, 2019

<https://cdn.mbta.com/sites/default/files/2019-12/2019-12-09-fmcb-B-safety-review-panel-final-report-accessible.pdf>



Undermanagement of resiliency



Sources: WB photo, Woods Hole Group flood mapping

Undermanagement of construction



Photo Sources: WB Photo of bus tunnel; other project photos from mbta.com

Undermanagement of operations

- Lack of dynamic response to bus route conditions
- Customer communications often poor
- Limited ability to control/absorb absenteeism
- ...

Fares rising much faster than cost of living

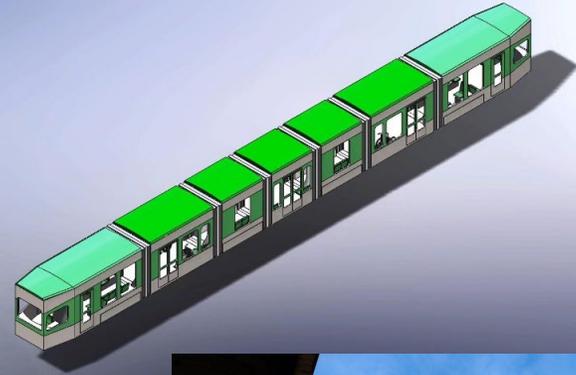


Sources: Fares from en.wikipedia.org/wiki/Massachusetts_Bay_Transportation_Authority CPI data from beta.bls.gov/dataViewer/view/timeseries/CUSR0000SA0

More annual operational funding for MBTA

- Needed for present quality of service
- Needed to develop capacity to build for the future
- State should transfer more annually to the MBTA
- No consensus yet on how much to transfer or how to fund the transfer

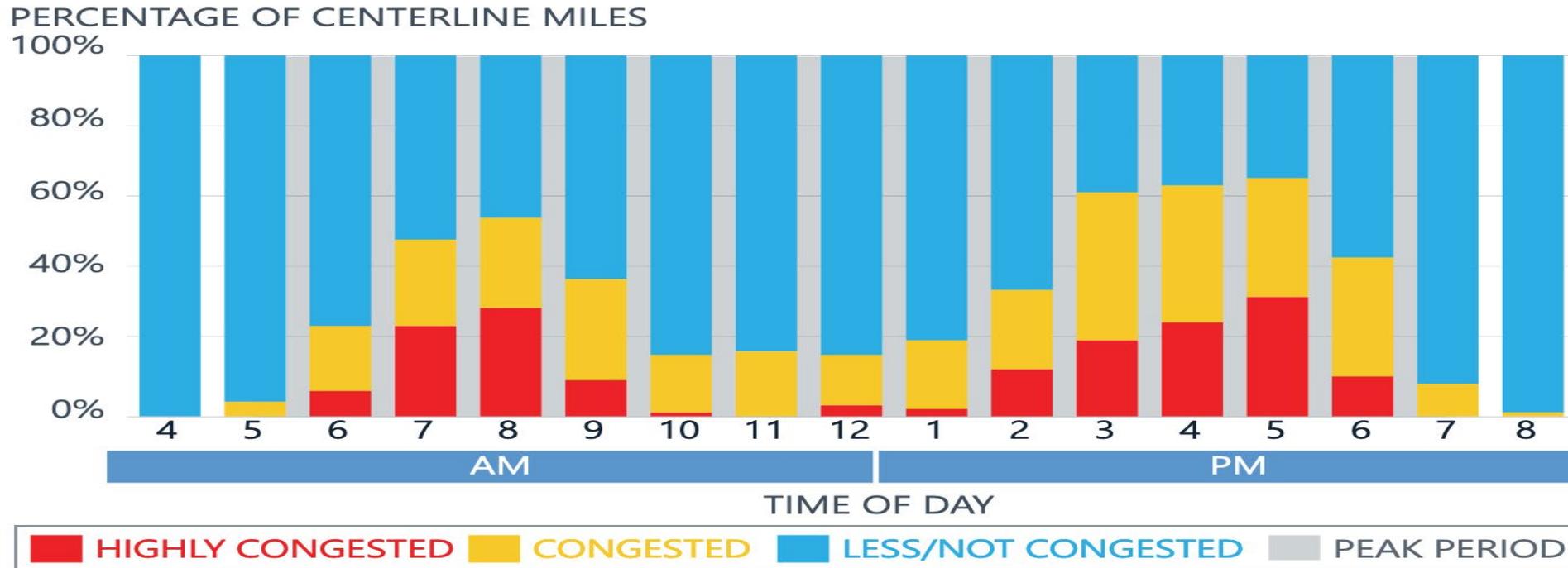
MBTA plans are in good focus except for rail



Photos Source: <https://mbta.com/>

Congestion bad and getting worse

Figure 3. Percent of Congestion on Study Roadway miles, Boston Region inside Route 128



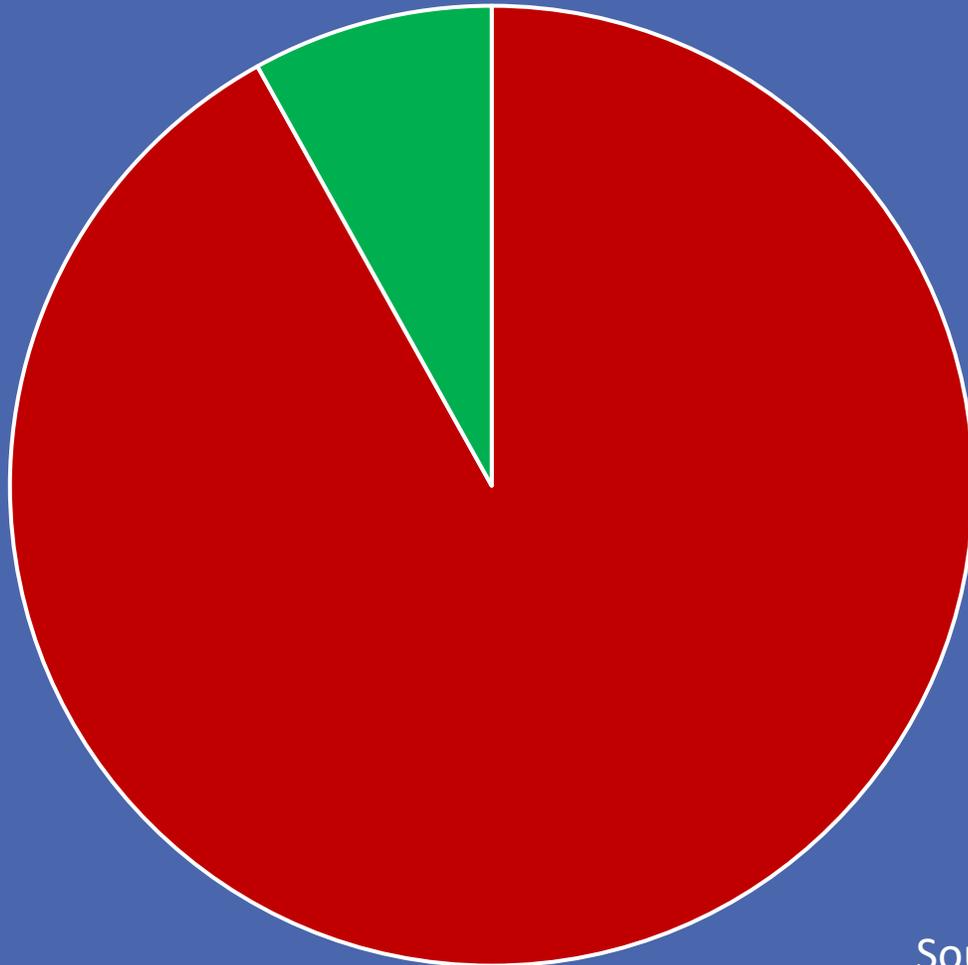
Annual net cost per daily transit rider

Full Transformation per new rider (+capital)	\$30,284
Full Transformation per new (ex capital)	\$9,199
Full transformation, all riders (ex capital)	\$4,985
Current commuter rail (ex capital)	\$2,260
Subway (ex capital)	\$249
Green line (ex capital)	\$1,212
Bus (ex capital)	\$1,610

Source: Calculations from Rail Vision Advisory Committee Presentation, October 18, 2019 and 2018 National Transit Database

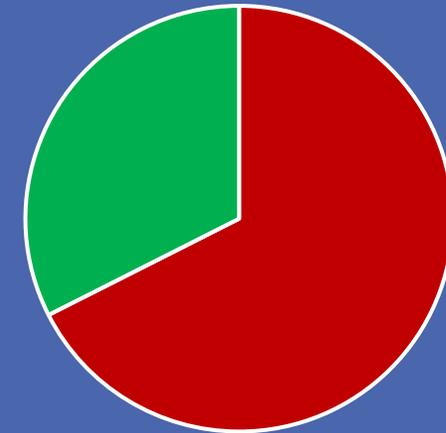
Can Rail Reduce Congestion?

24/7 Pike Corridor Travelers



■ Car ■ Rail

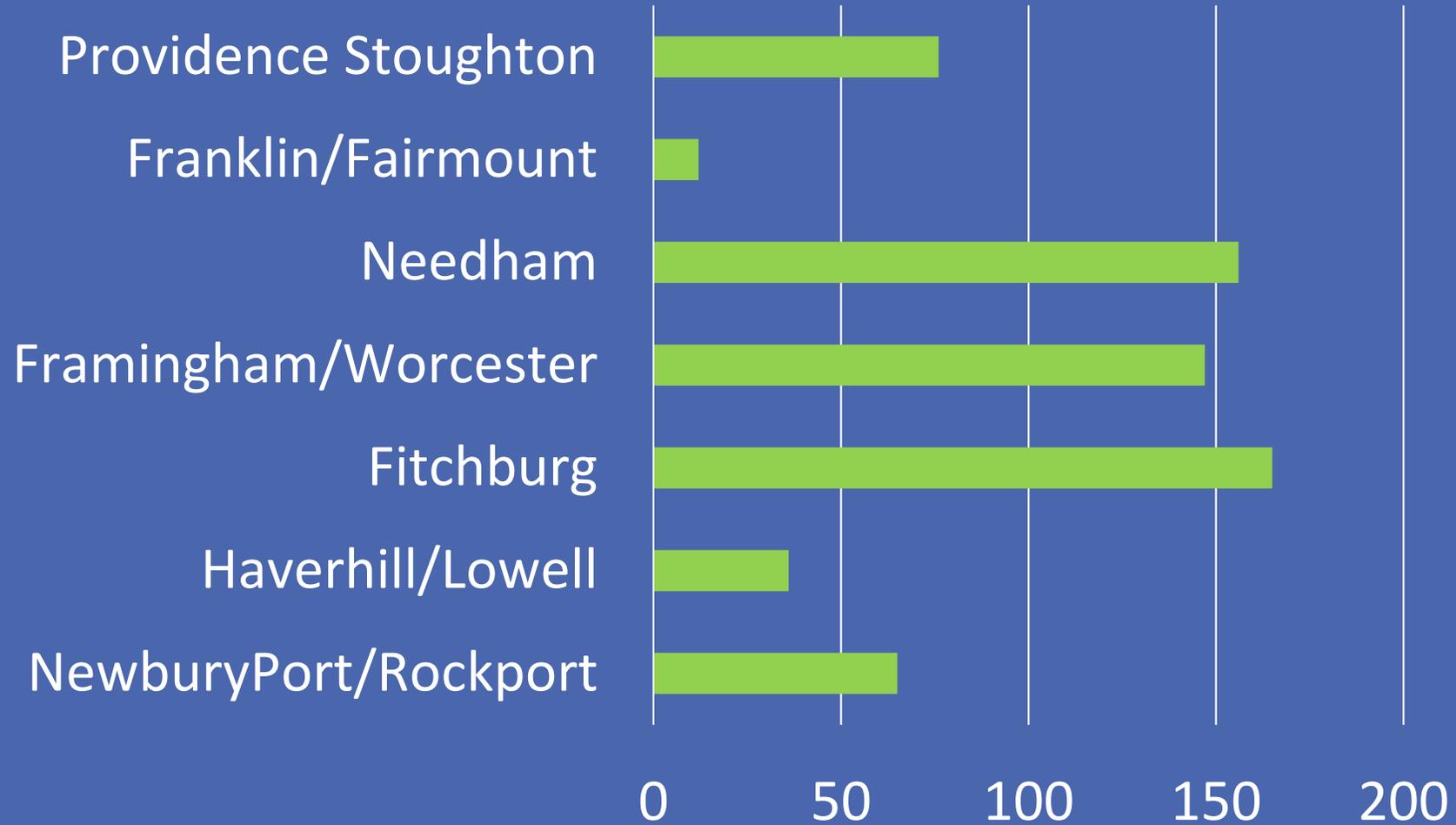
AM Rush Hour Pike Corridor Travelers



■ Car ■ Rail

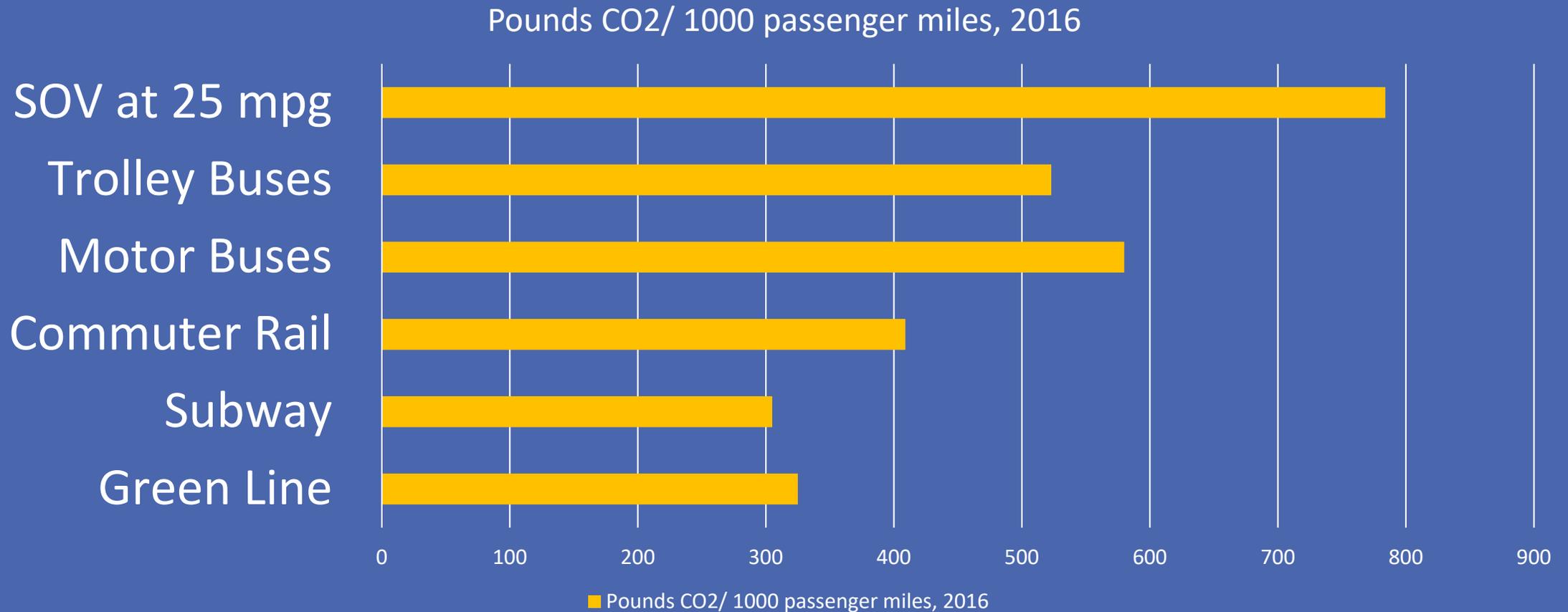
Source: <https://willbrownsberger.com/rail-at-rush-hour/>

New riders per new trip in Commuter Rail Vision Option 3



Source: Calculations based on Rail Vision Presentation to FMCB meeting, July 22, 2019

In any expansion, need ridership ROI (\$, GHG)



Source: <https://willbrownsberger.com/transit-energy-efficiency/>

Ridership constraints vary by line.



Stops	1501	1503	1505	1507	1509	1511	1513	1515
South Station	06:40A	08:40A	10:40A	12:40P	02:20P	04:20P	06:20P	08:20P
Back Bay	06:46A	08:46A	10:46A	12:46P	02:26P	04:26P	06:26P	08:26P
Lansdowne	06:49A	08:49A	10:49A	12:49P	02:29P	04:29P	06:29P	08:29P
Boston Landing	06:54A	<i>f</i> 08:54A	<i>f</i> 10:54A	<i>f</i> 12:54P	<i>f</i> 02:34P	<i>f</i> 04:34P	<i>f</i> 06:34P	<i>f</i> 08:34P

Photo sources: www.mapc.org/wp-content/uploads/2017/11/Littleton-Commuter-Rail-Parking-Study-FINAL-10-7-14.pdf, Shreder 9100 at English Wikipedia, CC BY 3.0, <https://commons.wikimedia.org/w/index.php?curid=19261912>

Transit investment prioritization framework

Target Market	Goal	Planning considerations	Risks
Existing customers (reliability)	Meet obligations; sustain system	Engineering	Project design and management
Existing commuters (mode shift)	Reduce congestion; reduce GHG	... + ridership predictions	... + bad predictions
New commuters (development)	Housing, economic development	... + partnership plans	... + other partner failures

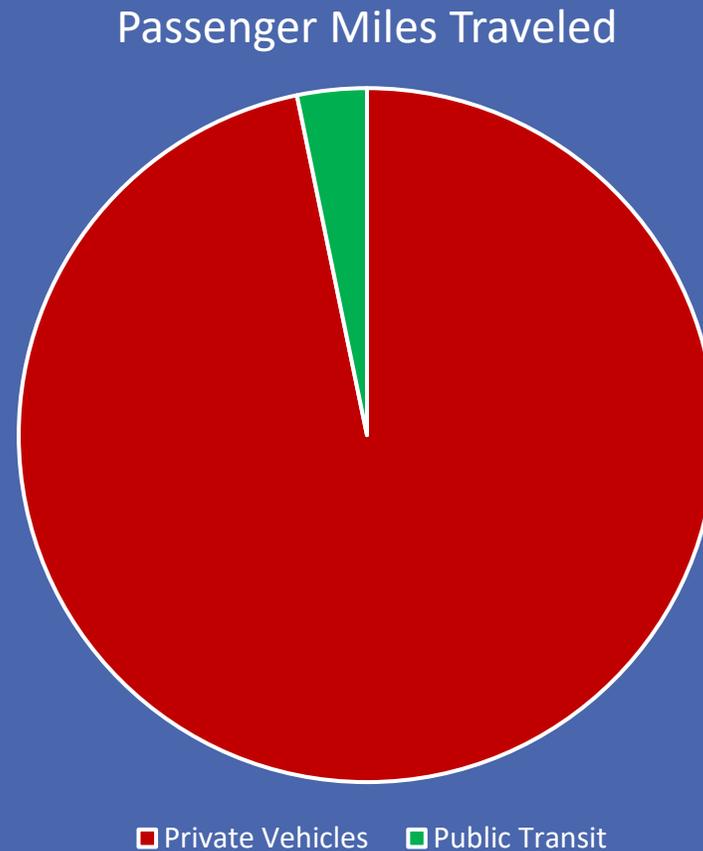
Line-by-line rail improvement plan

- Address reliability and bottlenecks first – signals, tracks, train control
- Select mode-shift investments based on lowest cost per new rider (expect will be at rush hour, so reducing congestion)
- Prioritize reliability and mode-shift before development vision

Summary

- More operational funding for MBTA
- Line-by-line rail improvement plan
- Next: Worcester and Fitchburg line solutions

Bigger picture: For GHG reduction, need to electrify private vehicles



Source: <https://willbrownsberger.com/transit-energy-efficiency/>

Additional Materials

Limited Capital Planning Capacity

[T]here is no question, current leadership is struggling to understand how they will deliver the accelerated Capital Program, keep legacy system assets fully functional, in addition to carrying out normal day-to-day [preventative maintenance inspections], given the current state of the Authority.

Safety Review Panel, Final Report, December 9, 2019

<https://cdn.mbta.com/sites/default/files/2019-12/2019-12-09-fmcb-B-safety-review-panel-final-report-accessible.pdf>

Policy changes to build capital capacity

- Personnel Flexibility measures
 - Salary policy
 - Availability of capital funds for design work
 - ...
- Public private partnerships
 - Not anti-union
 - Attract broad consortia to bid for projects defined at high level

Other issues

- Congestion pricing – create design commission
- Bus lanes and signal priority – MBTA/municipal partnerships
- Bicycle and pedestrian safety – pending legislation
- Car free urban areas – local planning decisions

Comparison of Alternatives 1-6 – Preliminary Results

DRAFT – final values in development, numbers may vary

	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)	+19,000 daily CR boardings (+13%)	+36,200 daily CR boardings (+24%)	+52,900 daily CR boardings (+35%)	+80,400 daily CR boardings (+53%)	+81,600 daily CR boardings (+54%)	+99,000 daily CR boardings (+66%)	+225,900 daily CR boardings (+150%)
	+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
Assumptions:							
-Fare Structure	-Current fares	-Current fares	-Current fares	-Current fares	-Current fares	-Urban rail fares	-Urban rail fares and distance-based fares
-Parking	-Parking constrained	-Parking unconstrained at most key stations	-Parking unconstrained at most key stations	-Parking unconstrained at urban rail termini	-Parking unconstrained at urban rail termini	-Parking unconstrained at urban rail termini	-Parking unconstrained at all stations (excluding rapid transit & limited parking stations)
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\$)	\$1.7B (2020\$)/ \$2.3B (2030\$)	\$4.5B (2020\$)/ \$6.3B (2030\$)	\$17.9B (2020\$)/ \$25.2B (2030\$)	\$8.9B (2020\$)/ \$12.6B (2030\$)	\$10.6B (2020\$)/ \$14.9B (2030\$)	\$10.6B (2020\$)/ \$14.9B (2030\$)	\$28.9B (2020\$)/ \$40.7B (2030\$)
Incremental MBTA Systemwide Revenues (2020\$)	\$29M/Year	\$52M/Year	\$52M/Year	\$58M/Year	\$48M/Year	\$15M/Year	\$80M/Year
Incremental MBTA Commuter Rail O&M Costs (2020\$)	\$130M/Year	\$379M/Year	\$439M/Year	\$333M/year	\$304M/year	\$304M/year	\$643M/year

Source: Rail Vision Advisory Committee Presentation, October 18, 2019

Can rail reduce congestion?

Table 8. Annual Average Daily Traffic on Select Corridors and Parallel Commuter Rail Line Ridership, 2012 vs. 2018

Study Network Corridor ⁵²	Count				Parallel Commuter Rail Line	Ridership		
	Station Number	2012 AADT	2018 AADT	Change over Time		2012 Ridership	2018 Ridership	Change over Time
Fellsway/McGrath Highway	8,089	32,092 ^a	30,951 ^c	-1,141	Haverhill Line + Lowell Line	16,664	17,893	1,229
Interstate 90 (inside I-495)	9,018	132,304 ^b	147,853 ^c	15,549	Worcester Line	12,207	18,057	5,850
I-93 Northeast Corridor	82	177,776 ^a	189,716 ^a	11,940	Haverhill Line + Lowell Line	16,664	17,893	1,229
I-93 Southeast Expressway	691	189,125 ^a	198,038 ^a	8,913	Middleborough/Lakeville Line + Kingston/Plymouth Line + Greenbush Line	14,120	19,034	4,914



Source: https://www.ctps.org/data/calendar/pdfs/2017/MPO_0504_Report_Core_Capacity_Constraints.pdf