

# Developing Strategies for the MBTA to Expand Service with Constrained Resources

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Thredbo 2015



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# Motivation for Increased Private Sector Involvement

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Parts of Boston are growing and will require increased transit service

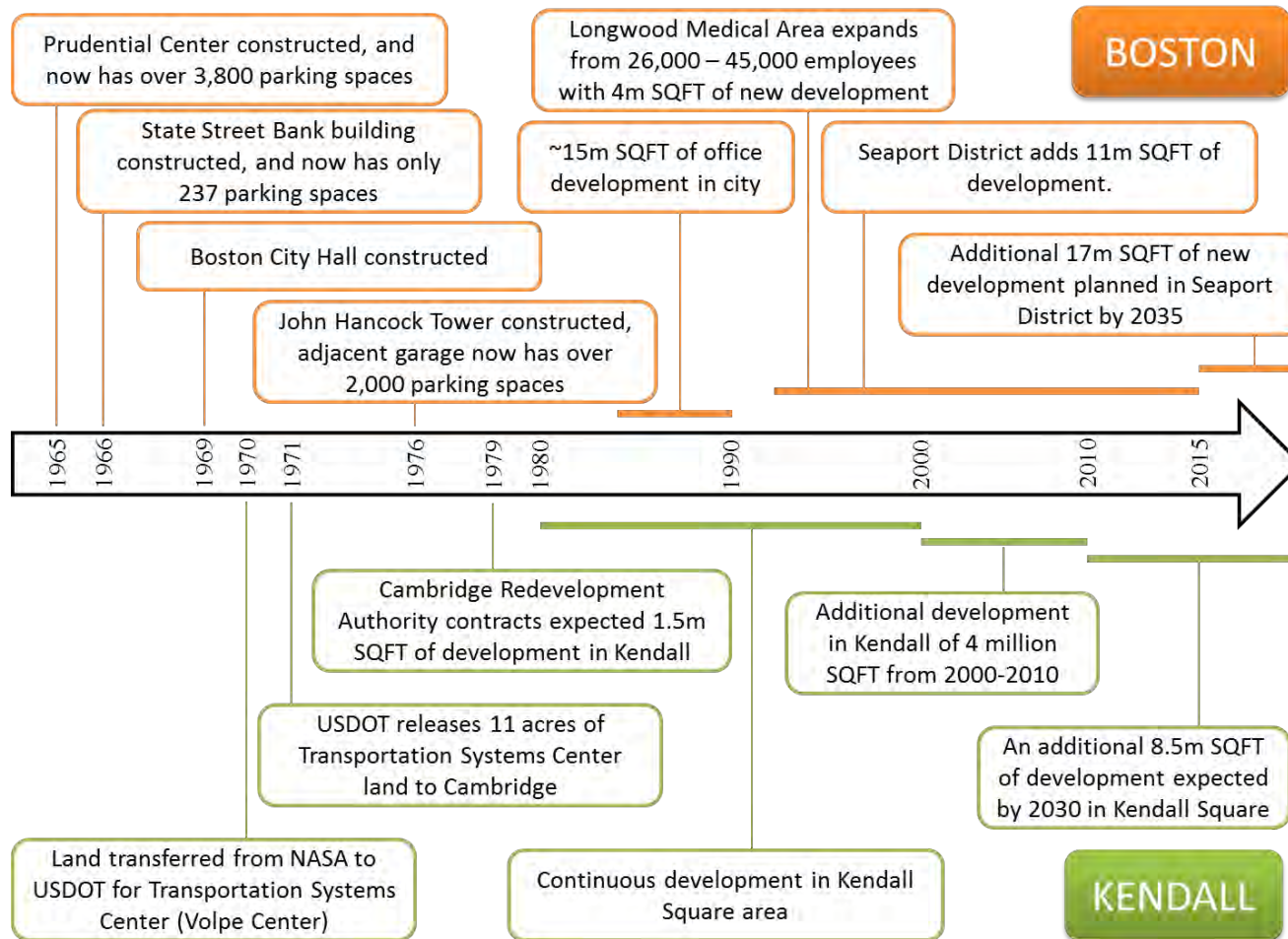


MBTA is constrained by funding, equipment, and facilities



→ Triple Transit, Bicycle, Walking Mode Share  
BY 2030

# Land Use Development





# MBTA Directly Operated Bus Service Trends

Year	Vehicles Operating in Maximum Service	Vehicle Revenue- Miles	Vehicle Revenue- Hours	Unlinked Passenger Trips	Passenger Miles Traveled
1992	776	22,723,426	2,241,692	95,096,574	217,961,347
2002	799	24,773,399	2,366,154	110,725,884	275,690,451
2012	789	24,184,591	2,422,811	118,618,285	305,909,089
<b>Percent Change</b>					
1992-2002	3.0%	9.0%	5.6%	16.4%	26.5%
2002-2012	-1.3%	-2.4%	2.4%	7.1%	11.0%

Data is from the National Transit Database, Data Series TS2.1 – Service Data and Operating Expenses Time-Series by Mode

# Constraints Limiting System Growth

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- ▶ Types of constraints, with MBTA examples
  - ▶ Infrastructure
    - ▶ Example: Bus maintenance and storage facilities
  - ▶ Equipment
    - ▶ Example: Aging bus fleet with marginal growth opportunities
    - ▶ Example: Limited to use of full-size buses
  - ▶ Institutional
    - ▶ Example: Pacheco Law and labor relations
    - ▶ Example: Limited contributions of municipalities and employers
  - ▶ Financial
    - ▶ Example: Identified underfunding yet possibility of decrease

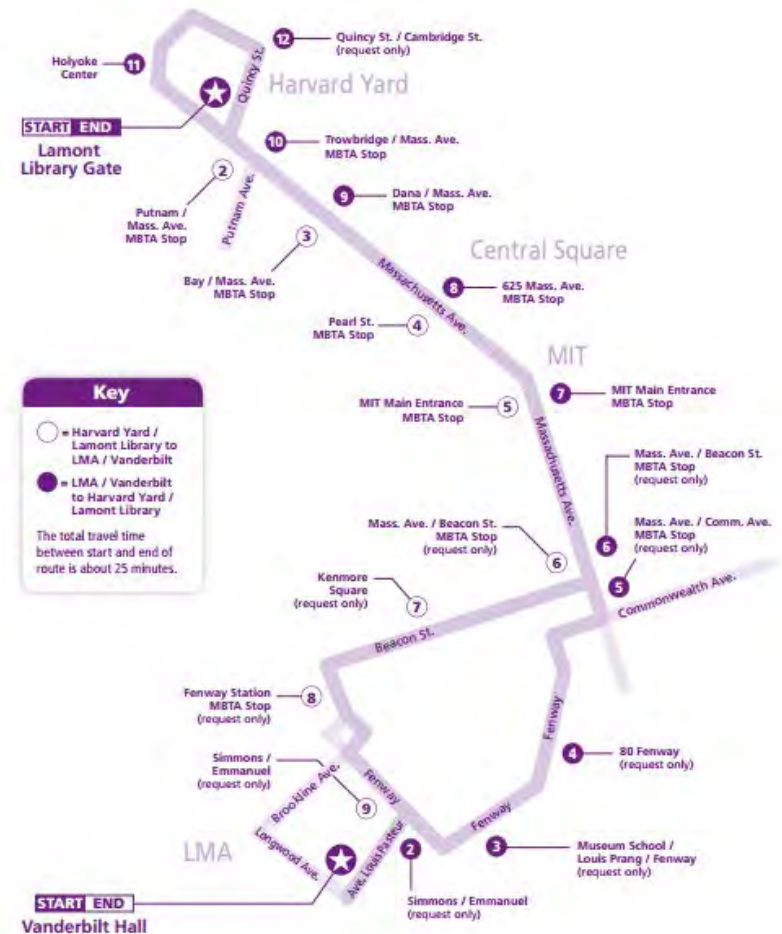
# Contracting with Existing Private Route

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- ▶ Increasing service through existing private operators:
  - ▶ Increasing public access to existing private routes
    - ▶ Example: [M2 Shuttle](#), [EZ Ride](#)
  - ▶ Expansion of private routes
    - ▶ Example: [Sullivan - Lechmere - Kendall - Kenmore route](#)
  - ▶ Consolidation of private routes
    - ▶ Example: [Seaport District](#)
- ▶ Benefits: Removing service gaps and/or improving frequencies and crowding levels without having the capacity to increase agency-operated service

# Opportunity: Increasing Public Access to Existing Privately Operated Routes

- ▶ Example: MASCO M2 Shuttle
- ▶ Purpose: Fill service gaps and alleviate overcrowding on MBTA services
- ▶ Currently ~ 2% public ridership
- ▶ Public access requires purchasing tickets at specified locations at fares well above MBTA bus fares
- ▶ Technology (and integration) possible using simple Charlie Card Reader on vehicles
- ▶ Other similar opportunities (e.g., EZRide Shuttle)



Source: MASCO. "M2 Cambridge / LMA." Available at [http://www.masco.org/system/files/downloads/directions/m2\\_cambridge-lma-pms2613\\_2014\\_2.pdf](http://www.masco.org/system/files/downloads/directions/m2_cambridge-lma-pms2613_2014_2.pdf).



# Opportunity: Private Route Expansion

- ▶ Example: Sullivan - Lechmere - Kendall - Kenmore route
- ▶ Purpose: Link the rail network in a rapidly growing area while supplementing proposed GLX mitigation measures
- ▶ Pacheco Law should not apply
- ▶ Existing operator (EZ Ride) in place for portion of route



Source: Rosen, Jamie. Evaluating Service Mitigation Proposals for the MBTA Green Line Extension Construction Delay Using Simplified Planning Methods, June 2013.

# Route Implementation: Phased Operations

Period	Time	Headway			Change in Operating Cost	
		Non-Overlapping	Lechmere - Kendall	Non-Overlapping	Daily	Annual
		New Route		EZRide		
Morning	6:20 AM - 10:50 AM	20	6	7	\$1,710	\$427,500
Midday	10:44 AM - 3:00 PM	18	18	20	\$1,621	\$405,333
Evening	3:00 PM - 8:00 PM	24	6	8	\$1,900	\$475,000
Total	6:20 AM - 8:00 PM	-	-	-	\$5,231	\$1,307,833

## Four Buses on New Route

Period	Time	Headway			Change in Operating Cost	
		Non-Overlapping	Lechmere - Kendall	Non-Overlapping	Daily	Annual
		New Route		EZRide		
Morning	6:20 AM - 10:50 AM	12	5	7	\$2,993	\$748,125
Midday	10:44 AM - 3:00 PM	11	11	20	\$2,837	\$709,333
Evening	3:00 PM - 8:00 PM	14	6	8	\$3,325	\$831,250
Total	6:20 AM - 8:00 PM	-	-	-	\$9,155	\$2,288,708

## Seven Buses on New Route

# Route Implementation: Full Operations

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Period	Time	Headway	Buses Required	Daily Op. Cost	Annual Op. Cost
Early Morning	5:30 AM - 6:30 AM	15	5	\$475	\$118,750
AM Peak	6:30 AM - 9:00 AM	10	8	\$1,900	\$475,000
Midday	9:00 AM - 3:30 PM	10	8	\$4,940	\$1,235,000
PM Peak	3:30 PM - 6:30 PM	10	10	\$2,850	\$712,500
Evening	6:30 PM - 8:00 PM	10	8	\$1,140	\$285,000
Late Night	8:00 PM - 12:40 AM	20	4	\$1,773	\$443,333
Total	5:30 AM - 12:40 AM	10 - 20	10	\$13,078	\$3,269,583

- ▶ Work with employers, Charles River TMA on funding service
  - ▶ E.g., if MassDOT provided buses, employers might be willing to contribute cost of daily operations

# Pressure to Expand: Seaport District

Exhibit ES-4: Existing and Forecasted Person-Trips by Mode



*Trips to/from/within the Waterfront are expected to grow by 63% from 2013-2035.*

Source: South Boston Waterfront Sustainable Transportation Plan, January 2015.

# Pressure to Expand: Seaport District

Route	Critical Peak Hour	Peak Direction <sup>1</sup>	Existing (2013) Demand	Seated Capacity	Max. Capacity	2035 Growth	Estimated Demand	Demand/Max Cap
Route 4	AM	Inbound	126	195	275	114%	270	98%
Route 7	AM	Inbound	654	585	880	26% <sup>2</sup>	826	94%
Route 11	AM	Inbound	486	390	550	29% <sup>2</sup>	629	114%
Silver Line 1 (741) <sup>3</sup>	PM	Inbound	269	228	318	53%	412	140%
Silver Line 2 (742) <sup>3</sup>	AM	Outbound	971	564	792	73%	1,670	211%
Silver Line Way (746) <sup>3</sup>	AM	Outbound	837	564	792	73%	1,448	183%

1. Per MBTA directionality (i.e., Inbound is typically toward downtown)

2. Based on CTPS regional growth model; growth for individual routes based on daily trip ends

3. Potentially additional Silver Line trunk service capacity with introduction of Silver Line Gateway

Source: South Boston Waterfront Sustainable Transportation Plan, January 2015.

# Opportunity: Consolidating and Increasing Service in the Seaport District - Background

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- ▶ Purpose: Increase public access to a rapidly growing area
  - ▶ Bus link to the Blue, Orange, and Green lines, and Commuter Rail
  - ▶ MBTA Silver Line and bus routes #4 and 7 could approach peak-hour capacity as Seaport development continues
  - ▶ Numerous existing privately operated shuttles also serve the district
    - ▶ 14 routes, 43 shuttles/hour in peak, same capacity as MBTA
- ▶ Previous work proposed sets of consolidated routes with 5 - 15 minute headways (Gu, Kladeftiras, Mohammad, and Xuto, 2014)

# Opportunity: Consolidating and Increasing Service in the Seaport District – Funding Route

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- ▶ Proposed route cost ~ \$4.2-4.6 million per year
- ▶ Estimated existing private shuttle costs are ~ \$9.3 million
  - ▶ Cost difference due to ability to significantly reduce bus-hours, which would also improve congestion in the Seaport District
- ▶ Institutional interests in the Seaport include:
  - ▶ Agencies (MBTA, MassDOT, Massport)
  - ▶ Governmental entities (Comm. of Massachusetts, City of Boston)
  - ▶ District employers (some currently involved with private transit)
    - ▶ Balance level of service vs. costs
  - ▶ Existing private operators
- ▶ Funding possibility: Business Improvement District
  - ▶ Minimal contributions while ensuring future employer buy-in
  - ▶ Concept of linking contracting to additionality

# Idea 2:

## Consider Vehicle Size Restrictions

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- ▶ Private sector can operate different types of vehicles
  - ▶ May have experience and equipment necessary to operate and maintain smaller vehicles (e.g. RTD in Denver)
  - ▶ Example: Adding small vehicles and reallocating full-size buses
- ▶ Opportunity: Routes #4 and #7 in Seaport
  - ▶ Route #4 infrequent and lower ridership, could be served by private sector smaller vehicles with equal or more frequent service
  - ▶ Assigning Route #4 buses to Route #7 would improve frequency and alleviate crowding
  - ▶ Contracting sets of routes like this might encourage operator bidding



# Idea 3:

## Funding Private Operator Vehicle Procurement

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- ▶ Public funding of privately operated vehicles
  - ▶ Exemplified by BusPlus+ program
  - ▶ Opportunity: Create urban transit BusPlus+ program
- ▶ Urban BusPlus Program Opportunity
  - ▶ MassDOT subsidize capital expenses by providing buses
  - ▶ Could competitive select operator-proposed service improvements with private operators fully paying operating costs (original BusPlus)
  - ▶ Alternatively could specify service requirements and subsidize private operating costs with revenue sharing above costs (continued BusPlus)
  - ▶ Benefit: either option allows for service increases with the private operator required to store and maintain vehicles

# Idea 4:

## Private Vehicle Supply for Public Operations

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- ▶ Good if main constraint is capacity at storage and maintenance facilities
  - ▶ Could allow for continued vehicle operation by agency employees
- ▶ Example: Contract guaranteeing that  $x$  vehicles would be delivered every day to the agency to operate
  - ▶ Would shift maintenance and storage risk to private sector
  - ▶ Challenge to agency maintenance workers, although these workers would continue to have at least the same amount of work as before
  - ▶ Allows for growth in number of agency vehicle operators

# Recommendations

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- ▶ Increase public access to existing privately operated routes to better integrate the public system with other services: [EZ Ride](#), [M2](#)
- ▶ Expand or consolidate existing privately operated routes: [Sullivan - Lechmere - Kendall - Kenmore](#), [Seaport](#)
- ▶ Provide different types of service through the private sector, such as operating smaller vehicles: [Routes #4 and #7](#)
- ▶ Focus on specific constraints limiting agency: [Develop Urban BusPlus](#), [Contract vehicle storage and maintenance with agency vehicle operations](#)
- ▶ [Continue the Discussion on the Pacheco Law](#)