



# **Massachusetts Bay Transportation Authority**

## Fairmount Line Decarbonized Service

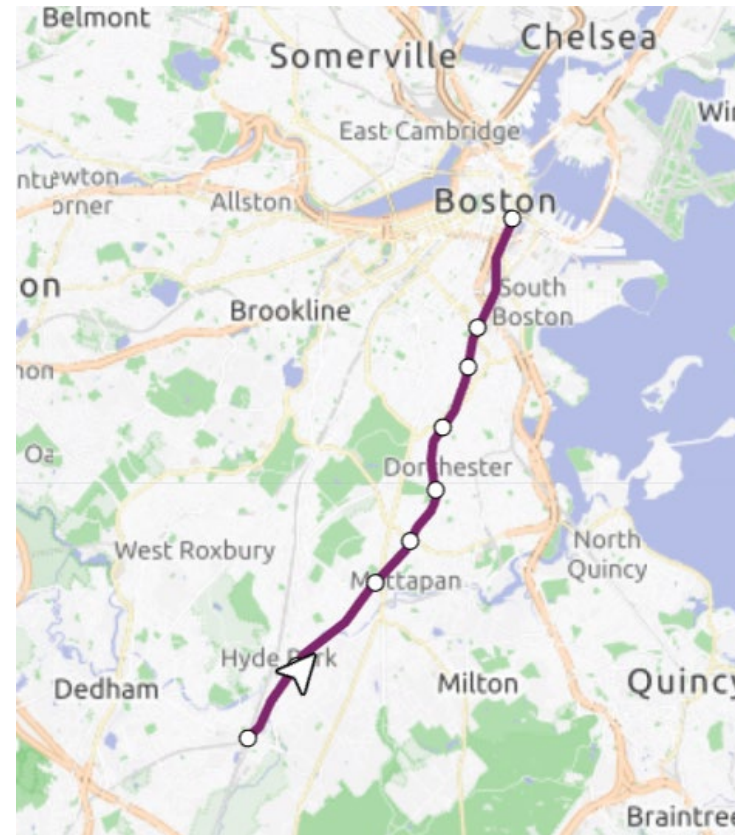
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Presentation to the MBTA Board of Directors

July 25, 2024

# Current Fairmount Line

- The Fairmount Line (also called the Dorchester Branch) is the shortest of the Commuter Rail Lines, with 9 stations (including South Station and Readville)
- Commuter Service on the line began in 1976
- The line was substantially upgraded between 2006 and 2019, with four stations added
- In April 2024, it carried 3,200 people per day
- Since May 2024, service operates every 30 minutes all day in both directions every day



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Readville	32
Fairmount	24
Blue Hill Avenue	
Morton Street	21 26
Talbot Avenue	22 45
Four Corners/Geneva	19
Uphams Corner	15 41
Newmarket	
South Station	4 7 11



# Fairmount Line Decarbonization



- In 2019 the FMCB directed the MBTA to start electrification on the Fairmount, Providence and Newburyport/Rockport lines
- With the existing electrification infrastructure at South Station, this is an ideal line to begin the process of modernizing and decarbonizing
- Proposal provides all day service every 20 minutes
- Battery-Electric service saves 1.6 million gallons of fuel and 17,700 tons of Carbon Dioxide per year compared to Diesel



# The Advantages of Modernizing with BEMUs

- Following a technology study in 2021, discontinuous electrification utilizing BEMUs was selected as the preferred modernization approach
- Multiple-Unit trains will provide an enhanced passenger experience, with smoother rides, more space, and a modernized experience
- Battery-Electric trains provide a quieter, faster service, with significantly reduced noise and vibration for passengers and residents adjacent to the route, yards and maintenance facility
- The use of batteries drastically reduces infrastructure costs by not requiring wires for the entire route (which often requires rebuilding stations and bridges)
- BEMUs are able to recharge using the overhead wires where they exist, and operating on the batteries for other sections



# Keolis's Innovation Proposal

- Keolis will act as a Project Delivery Partner (“PDP”) to project manage:
  - The new decarbonized fleet
  - Additional power and charging infrastructure
  - A new light maintenance facility
- PDP approach split into two phases:
  - Preparation phase to design and develop procurement documents
  - Delivery phase to project manage and integrate
- 20-minute service frequency all-day in both directions
- The first train projected to be in service by early 2028
- MBTA is separately undertaking a procurement for a successor operator as the current Operating Agreement expires on June 30, 2027
- PDP Agreement will require a transfer of the various services to the entity that MBTA selects as the successor operator



Conceptual designs of potential decarbonized Commuter Rail trains provided by Stadler, Alstom and Siemens in response to MBTA RFIs



# The Proposal – History & Competition

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- Keolis Submitted their Innovation proposal on December 22, 2023 in accordance with the MBTA's Innovation Proposals Policy. This policy follows FTA procurement best practices.
- A Due Diligence posting was made on March 15, 2024
- Three responses were received to the Due Diligence Posting. These Respondents were given the opportunity to submit a detailed response as to how they would deliver the required service
- Upon evaluation, the responses did not meet the stated performance requirements or were withdrawn by the respondents
- Keolis's Proposal is being recommended to the board



# Modernizing with a Project Delivery Partner

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- Partnering with a PDP to deliver the service:
  - Ensures an operable design for the service, which can be reflected in the requirements for the train
  - Leverages the Keolis team's international experience procuring trains of this type and their global relationships with train manufacturers
  - Puts a single entity in charge of integration of the train, power, signals and facilities
  - Ensures coordination of crew training



# Costs for the Project Delivery Partner

- Keolis, as Project Delivery Partner, will be responsible for Program Management
- The Preparation phase is focused on design and development of procurement documents for:
  - Train performance requirements
  - Lease Agreement
  - Light Maintenance Facility
  - Necessary electrification infrastructure
  - Layover tracks
- These will then be procured in accordance with all public bidding requirements
- As Project Delivery Partner, they will then be responsible for procurement and delivery and will be paid its design and program management costs on achievement of milestones
- Total of PDP services milestones is \$54million

Fee covers all five stages. Includes below costs:

- Program Management
- BEMU – Project management (PM), procurement costs, design, legal documents, technical consultants, technical support for inspection / Quality Control, resident engineer, manual review, legal support, commissioning and oversight, operator planning resource
- BEMU – contract management for mobilization
- Fleet Systems Integration.
- Maintenance Facility Design Build (DB)– strategy, option and site selection, PM, environmental assessment, design, DB legal documents, legal and commercial support.
- Power system/ Layover – PM, power modelling, technical consultants, procurement costs, environmental assessment, legal support, signal immunization assessment, design and implementation.
- Operational Planning
- Financial Modelling
- Marketing and Communications (other than Mock-up / Demo Vehicle)





# Subsequent Costs – Future Matters

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## BEMU Procurement

- Keolis will manage the procurement of a Lessor and a Train Manufacturer
  - Develop procurement documents:
  - Negotiate terms
  - Obtain MBTA approval
  - Oversee train manufacture & delivery
  - Lead integration of train and systems
  - Oversee testing and acceptance in conjunction with Lessor and MBTA
- Lease will be structured to transfer to successor Commuter Rail Operator
- Train Operations & Maintenance Cost estimated at \$27-30 million per annum including lease payment

## Infrastructure & Maintenance Facility

- The following facilities will be designed, procured, and constructed through Keolis:
  - Light Maintenance Facility (LMF)
  - Necessary additional Electrification Infrastructure
  - Layover tracks
  - Signal modifications
- Costs estimated at ~\$70 million
- Estimate and payment structure will be finalized through the first stage of the PDP



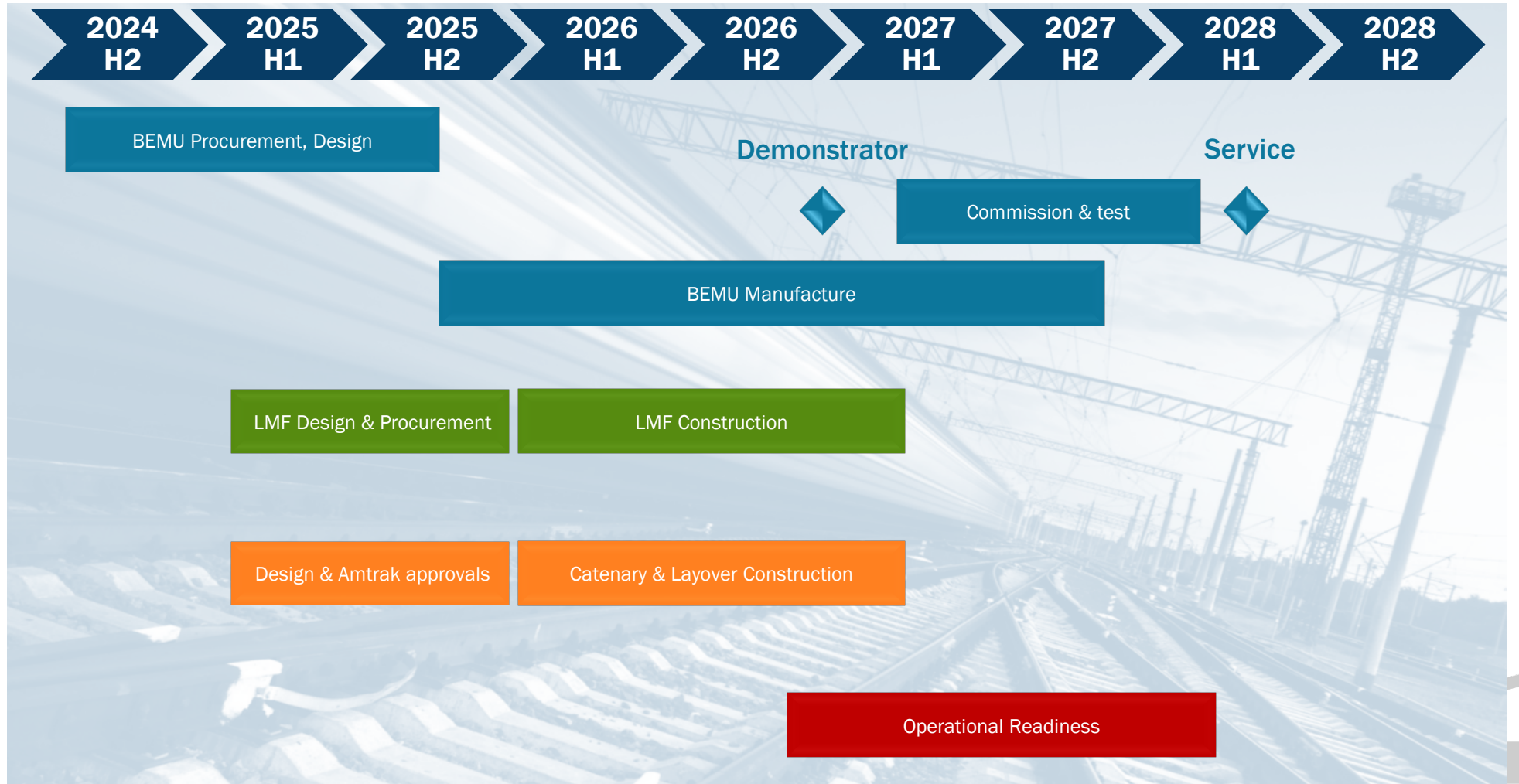
# Implications for the rest of the Commuter Rail

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- While the Fairmount line will be modernized with this project, the rest of the network will benefit
- The current service on the Fairmount Line requires 3 sets of equipment. These will be re-deployed to improve frequency and resilience on other Lines
- Spare BEMUs can be used to test the service on other lines
- Maintenance Facility will allow rapid service expansions once additional trains are procured



# Forecast Timeline



**BEMU Procurement & Delivery**

**BEMU Light Maintenance Facility**

**Power Systems and Layover**

**Operations & Training**

## Board Action | Fairmount Line Decarbonization

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To authorize the General Manager or his designee to enter into a professional services agreement with Keolis Commuter Services to act as Project Delivery Partner for the Fairmount line decarbonized service for an amount not to exceed \$54million and to execute such other and ancillary documents to effectuate the agreement.

