

AFC 2.0

Systems Integrator Contract

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What we are presenting today

UPDATE ON THE PROCUREMENT FOR THE AFC 2.0 SYSTEMS INTEGRATOR FOR AUTOMATED FARE COLLECTION SERVICES

- Show details on selected system
- Provide an overview of the contract
- Summarize the procurement process
- Provide a cost comparison
- Request approval to enter into contract

Next generation fare collection

Time for investment in a new system



Improve the customer experience

- Make it easier to pay
- Offer convenient options for fare media
- Provide more places to purchase and reload
- Support tap on for all transit modes

Ensure equal access

- Improve accessibility for seniors and people with disabilities
- Meet the needs of and provide increased access to low-income, minority, and other disadvantaged groups

Upgrade assets

- Replace worn hardware
- Update outdated software and back office
- Provide a secure communications network to exchange data
- Keep assets in a state of good repair

Improve revenue control

- Provide fully reconciled, auditable and accurate revenue deposits and reports
- Reduce system-wide cost of fare collection
- Control fare evasion
- Prevent fraud

Focus on core operations

- Improve ridership and revenue data
- Reduce vehicle boarding and fare collection times

Support the future MBTA

- Enable fare policy innovation
- Integrate with other agencies, modes, carriers and services
- Adopt best practices from other transit agencies
- Provide configuration and operational flexibility

The proposed system

Easier, more convenient payment options

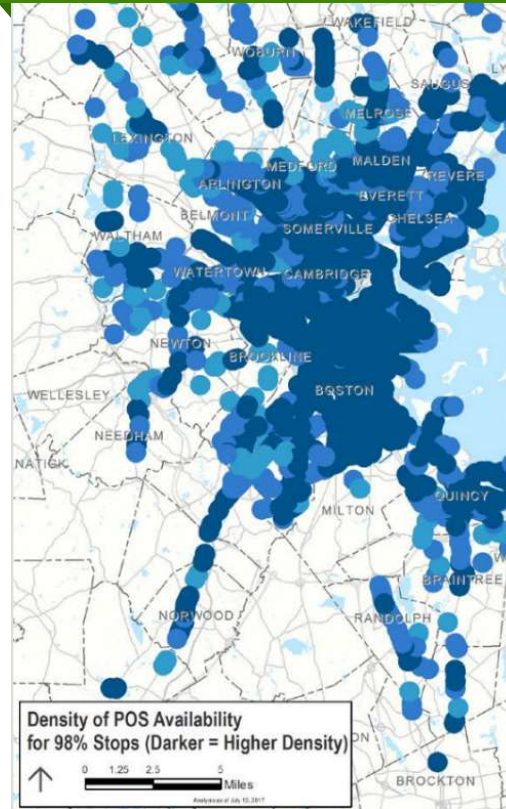
In stations



At bus stops



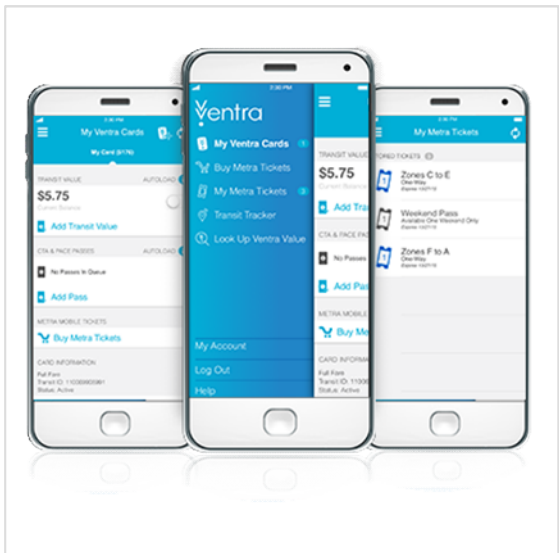
At retail



Travel without a fare card

Bring your own media options:

- Contactless credit card
- Mobile devices



Easier to get a fare card

- Fare vending machines dispense cards
- Cards available at retail locations

Tap on for all transit modes



The proposed system

Wider gate aisles

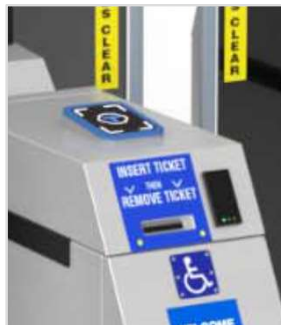


Full hardware replacement in all gated stations

- Every gate will have tap targets on entry and exit sides to support option for future implementation of tap out
- All gate aisles will be wider
 - Standard gate 29.9” wide (almost 7” wider than current)
 - Accessible gate is 40.9” (5” wider than current accessible gate)

Modified gates during transition

- Existing gates will be fitted with additional tap targets to accept new media
- Upon completion, all gated stations will have new gates and only new media will be accepted



The proposed system

All modes included at launch



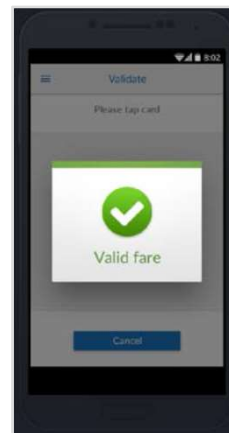
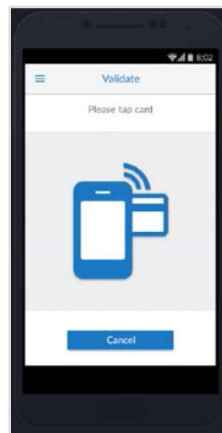
Pay on the platform

Station validators will be installed on all platforms at Commuter Rail and Mattapan Line stations



Tap on and tap off for Commuter Rail and Mattapan Line

- Top up or purchase a pass before you ride
- Tap on before you board, tap off after you alight, tap to transfer
- Use any media: fare card, mobile phone or contactless credit card



On board enforcement

- Handheld devices will be used on board to check validity of fare media
- Passengers may be asked to present proof of payment

Support all-door boarding



Board at any door on bus and Green Line

- Multiple validators will be installed at all doors on buses and Green Line
- Passengers can quickly board at any door and tap on
- Large tap area means that users don't have to be as precise with their taps

Removing cash from on-board vehicles

- Validators will replace fare boxes
- Will be installed alongside fareboxes during the transition
- Fare boxes will be removed after the transition is complete

Service improvements

- Having tap areas at every door of vehicles supports all-door boarding
- Loading passengers through all doors is expected improve bus speeds by up to 10%



The proposed system

Prioritize data as well as privacy

Devices will be online

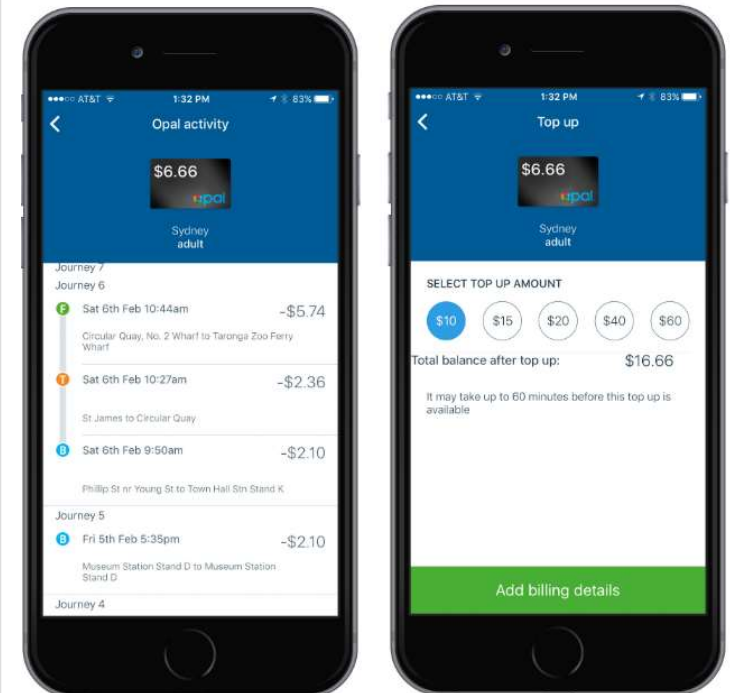


Privacy is an essential part of the system

- Protection of personally identifiable information (PII) is not just a policy, it's built into the design of the system
- Mobility information is separated from PII, so that where you go and who you are can't be linked unless you, the customer, give permission
- Because of these protections, aggregated and depersonalized data can be used for service planning
- AFC 2.0 privacy requirements are above and beyond the industry standard


New back office

- Improves revenue reconciliation
- Improves data collection to allow MBTA to run more data-driven service
- Paired with extensive privacy and information security requirements to ensure customer privacy



Two contracts

THE MBTA IS SIMULTANEOUSLY RUNNING TWO SEPARATE PROCUREMENT PROCESSES FOR THE IMPLEMENTATION OF THE AFC 2.0 SYSTEM. STATION INSTALLATION WORK WILL BE PERFORMED BY A SEPARATE DESIGN BUILD ENTITY.

	Systems Integrator (SI)	Design-Builder (DB)
Responsibilities	<p>Overall system design and basis of installation work:</p> <ul style="list-style-type: none"> • Provision of all devices and equipment • Oversight and approval of DB work • Development of back office system • Installation on vehicles • Development of plans and specs for DB contract 	<p>Final design and installation of:</p> <ul style="list-style-type: none"> • Gates at stations • Fare vending machines at stations and stops • Platform validators at Commuter Rail and Mattapan Line • Communications network
Contract	Public Private Partnership contract lasting 13 years, with two five-year extensions	Standard DB contract lasting 2-3 years
Budget	Approved CIP includes \$407M for this project, including SI, DB, and project oversight	FMCB voted in March to approve \$56M, included in approved CIP
Date of Award	For Board Vote today 	Scheduled to be awarded in Late 2018

AFC2.0 is MBTA's first public private partnership (P3)

- P3 structure allows MBTA to reduce its risk exposure for a combined technology and installation project
- Aligns incentives, with payment tied to timely completion and continued achievement of performance requirements
- Allows for a life-cycle approach to decision making
- Helps to ensure a timely and smooth introduction and a high level of performance over the long term

Performance-based contracting: P3

Benefits

- Performance-based contracting:
 - Aligns the incentives of the private sector with the goals of the MBTA
 - Establishes a balanced, cost-effective risk allocation, transferring appropriate risk to the vendor
 - Private finance as security for performance
- Private sector vendor provides upfront funding for capital investment, public sector sponsor retains ownership of assets.
- Provides for close coordination between installation, maintenance, operations and customer service
- Integrated project delivery to provide for:
 - Single point of responsibility
 - Expedited project delivery; and
 - Life-cycle cost approach to project decision-making

Who else is doing it?

- Increasingly a contracting best-practice, many transit and non-transit sector projects are being procured in this way
- Maryland Transit Authority (MTA) reached financial close on Purple Line project in 2016
- Regional Transportation District of Denver, CO (RTD) awarded their Eagle P3 contract in 2010
- Other sectors using performance-based P3s include state highways, broadband, street lighting, airports, public buildings and public universities

A new way of delivering projects

THE AFC 2.0 PROJECT REPRESENTS A NEW WAY OF DELIVERING PROJECTS FOR THE MBTA: PERFORMANCE-BASED P3

- The MBTA will enter into a single contract with the Systems Integrator who is responsible for the design-installation-finance-operations and maintenance of the system, including a **13 year initial term and two five year extension** options.
- The MBTA **evaluated proposals based on both the technical solution and the price proposal**. The price proposal included committed pricing for the initial term, both option terms and unit prices for unplanned expansion
- The technical requirements provided proposers with the **ability to design innovative solutions** to reduce costs, minimize risks and improve outcomes
- Proposers were required to include committed financing as part of their proposals. Debt providers **independently assessed the risk** of the proposer being able to deliver the project on-time and on-budget
- MBTA makes **no progress payments to the SI for performance of implementation work**. Payments phase in as milestones are successfully achieved.

Key commercial features

Operations and Maintenance

- The SI is responsible for all maintenance and operational services, including collection and remittance of fare revenue.
- The SI is required to remit to the MBTA the calculated amount of fare revenue within 5 business days.

Deductions for failure to meet KPIs

- The SI must monitor system performance and provide reports to the MBTA
- Monthly payments will be subject to substantial performance-based deductions
- Up to 50% of the SI's monthly payment is at risk for poor performance
- Deductions are calculated based on service level agreements (SLAs) and key performance indicators (KPIs)
- The Project Agreement includes an earn back regime to incentivize improvement, up to a maximum earn back of 75% of prior deductions
- Earn backs are only possible for exceptional service

P3 contract structure balances risks

Risks transferred to the SI

- Performance (including that of subcontractors)
- All aspects of contract services, including financing
- Cost overruns
- Handback at the end of the contract term

Risks retained by MBTA

- Benchmark interest rate movement prior to Financial Close
- Supervening events
- Failure to pay
- Construction and installation in stations and other public areas

Key contract provisions

Termination

- Prior to Financial Close
- For Convenience or MBTA Default
- By Court Ruling
- For Extended Events and Uninsurable Risks
- For SI Default

Dispute resolution

- Independent certifier
- DB Dispute Review Board
- Independent Evaluator
- Independent Payment Consultant

A fair and thorough procurement and evaluation process

- Public private partnership required significant internal and external coordination supported by industry leading partners
- Project set new MBTA precedent for proposer engagement: contract is negotiated prior to receipt of fully committed proposals
- Technical and financial proposals were evaluated separately

Procurement process

Coordination and negotiation

- Public private partnership required significant internal and external coordination, supported by industry leading partners
- The project set new MBTA precedent for proposer engagement
 - Five rounds of one-on-one meetings with each proposer team
 - Site visits to MBTA stations
 - Vehicle inspections and facility tours
 - Device demonstrations
 - Online Q&A forum
 - Written comment submission process
- Contract has been negotiated prior to award
 - Iterative updates to Project Agreement released to Proposers between November 2016 and June 2017
 - Changes responding to feedback and questions from Proposers

Technical proposal evaluation

- Selection committee considered information from the Proposals, clarifications, subject matter expert reviews, field teams, and Proposer interviews

Financial proposal evaluation

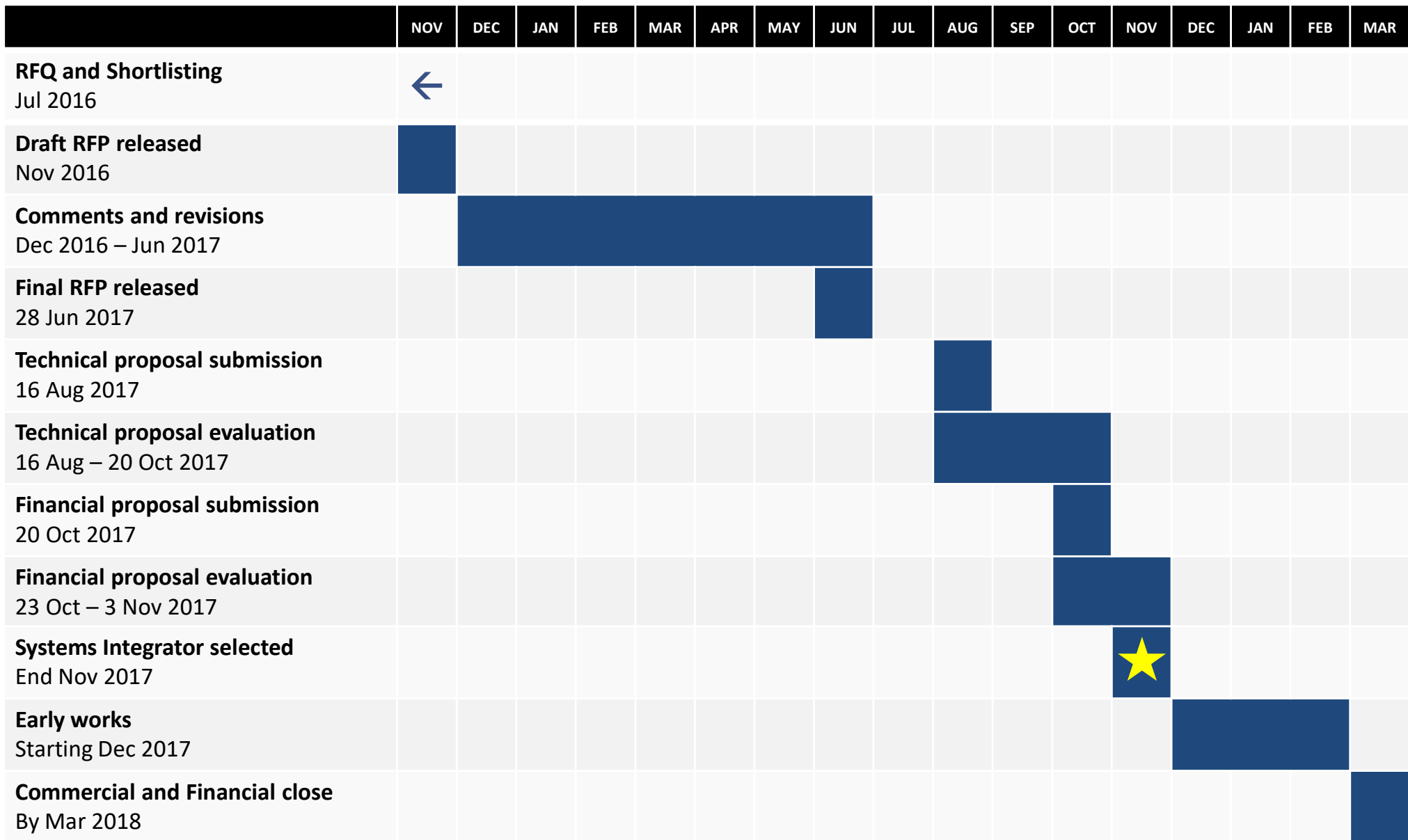
- Scoring uses net present value (NPV) to avoid gaming by Proposers
- Each Proposer's price was evaluated on a comparative basis against the lowest price received
- The selection of the SI was based on a best value approach, considering technical solution and price (evaluated separately)

Team of experts

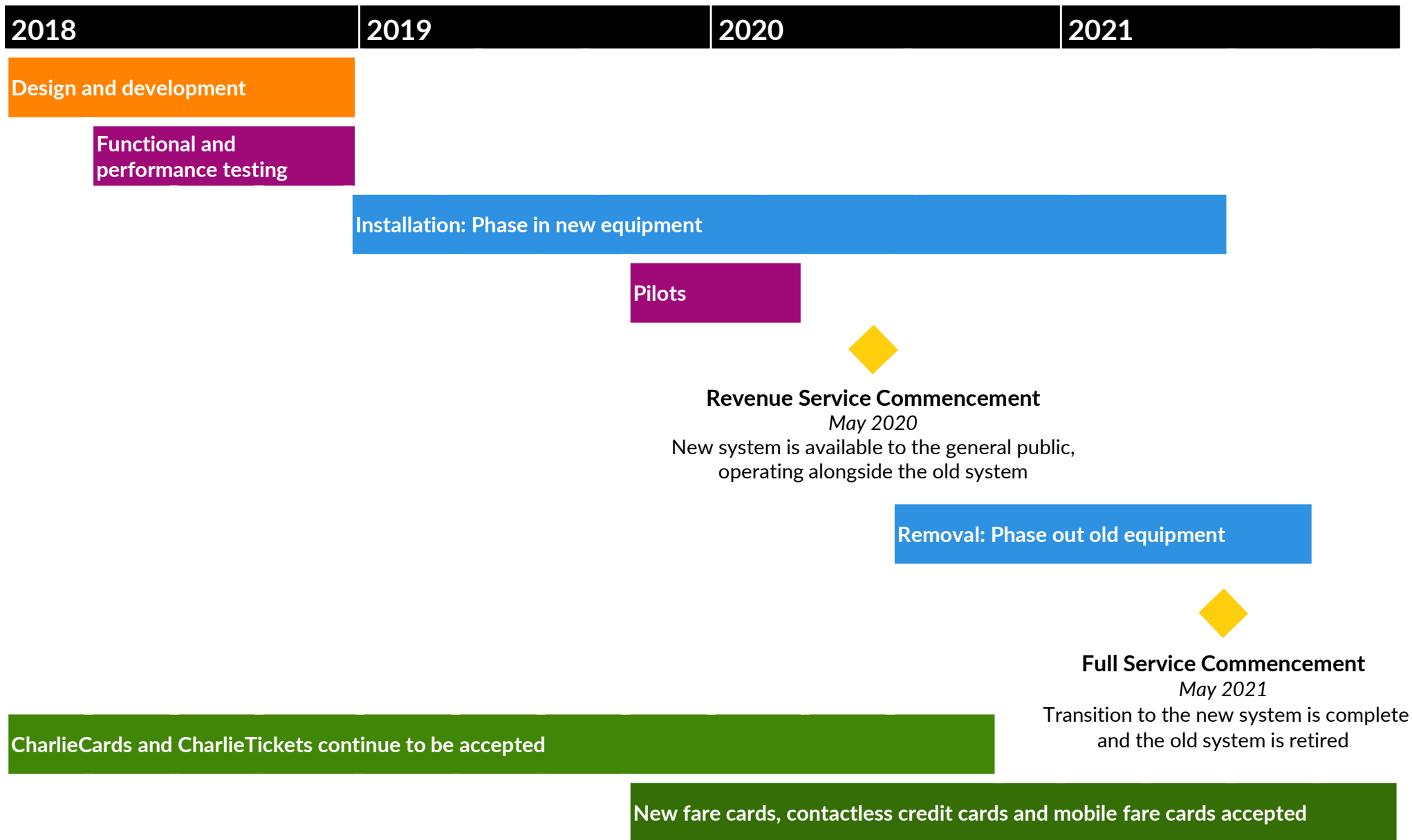
DURING THE PROCUREMENT, INTERNAL AND EXTERNAL SUBJECT MATTER EXPERTS HAVE BEEN ENGAGED TO SUPPORT REQUIREMENTS DEFINITION AND PROPOSAL EVALUATION.

- MBTA AFC 2.0 Project Office
- Project Agreement development: Hawkins Delafield & Wood LLP
- Financial consultants: Ernst & Young Infrastructure Advisors LLC
- Technical consultants:
 - Chyp (Consult Hyperion) – payments technology
 - Bay Computer Associates – gate technology and device specifications
 - CH2M – vehicle installations
 - LTK – cost estimating and risk
 - Jacobs – installation planning
 - Nitsch Engineering – install feasibility and quantity standards
 - FTG – communications network existing conditions assessment
- Legal consultants:
 - Holland & Knight – intellectual property law
 - Prince Lobel – local law
 - Foley Hoag – equity
- Marketing and branding firm: Argus
- Experts from across the MBTA and MassDOT
 - Automated Fare Collection
 - Budget
 - Capital Delivery
 - Capital Oversight
 - Civil Rights
 - Customer Experience
 - Design and Construction
 - Digital Services
 - Engineering and Maintenance
 - IT
 - Marketing & Communications
 - Law
 - Operations
 - OPM&I
 - Planning and Scheduling
 - Railroad Operations
 - Real-time Applications
 - Safety
 - System-Wide Accessibility
 - Training
 - Treasurer/Controller
 - Vehicle Engineering
 - Vehicle Maintenance

Procurement process and timeline



Implementation timeline



Bidder pool

FOUR VENDORS WITH STRONG QUALIFICATIONS AND EXPERIENCE IMPLEMENTING SIMILAR SYSTEMS IN OTHER CITIES

VENDOR



Scheidt & Bachmann
and Star America



Accenture
and Plenary Group



Greater Boston Mobility
Partners
Conduent (formerly Xerox) Transport
Solutions and InfraRed Capital Partners



Cubic | John Laing

EXPERIENCE



PARTICIPATION

Shortlisted through the RFQ process

Engaged during requirements refinement

Shortlisted through the RFQ process

Engaged during requirements refinement

Shortlisted through the RFQ process

Engaged during requirements refinement

Submitted a technical and financial proposal

Shortlisted through the RFQ process

Engaged during requirements refinement

Submitted a technical and financial proposal

Overall scores

OVERALL SCORES ARE THE SUM OF THE TECHNICAL FINANCIAL SCORES. THE PROPOSER WITH THE HIGHEST OVERALL SCORE IS THE RECOMMENDED PROPOSER.



Greater Boston Mobility Partners <i>Conduent (formerly Xerox) Transport Solutions and InfraRed Capital Partners</i>	Cubic John Laing
Final score = 1,954	Final score = 2,522 ★

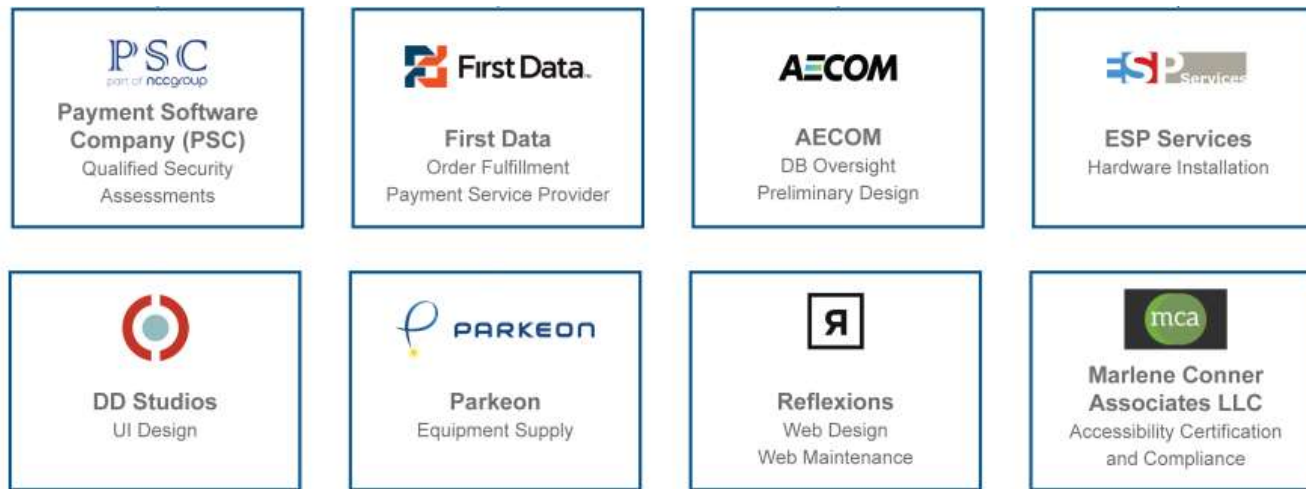
Selected proposer

Cubic | John Laing



John Laing
making infrastructure happen

- Brings together **best-in-class expertise**, technology, services, and financial resources



- Leverages their **experience in completing similar deployments** in comparable transit systems
- Uses extensively **field-proven devices**, updated with iterative improvements to meet MBTA requirements and user needs



London



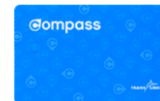
Sydney



Chicago



Miami



Vancouver



Brisbane



San Francisco

Comparing costs of MBTA and P3 delivery

- Capital investment is initially funded by the SI; MBTA payments for operations begin when system is in place
- Operating costs are lower than current system and are known through the end of the initial term (FY31) and for the two extension terms of five years each

Amount of award

Capital

Total APC (Initial Term – Year of Expenditure \$)	\$ 323,890,388
MBTA Share of Independent Certifier & DB Dispute Review Board (Estimate)	\$ 500,000
MBTA Retained Risk -- Benchmark Interest Rate Movements Contingency (US\$ LIBOR)	\$ 32,389,038
Total Capital Award Amount	\$ 356,779,426

Operating

Total APO (Initial Term – Year of Expenditure \$)	\$ 288,571,396
Total APT (Initial Term – Year of Expenditure \$)	\$ 76,346,329
MBTA Share of Independent Payment Consultant (Estimate)	\$ 1,600,000
Total Operating Award Amount	\$ 366,517,724

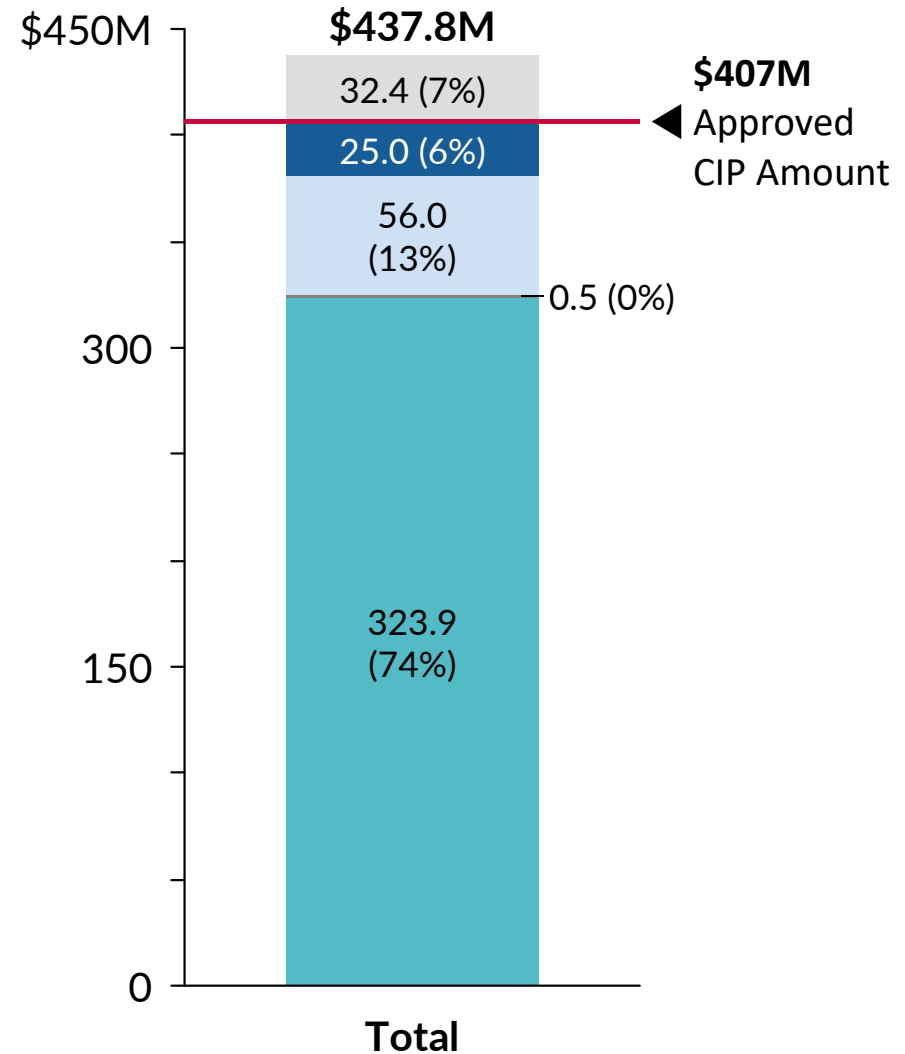
Notes:

- Both Capital and Operating distributed over initial contract term (to FY31)
- Assumes successful milestone achievement
- Assumes no deductions for poor performance
- Assumes no supervening events

Capital funding availability

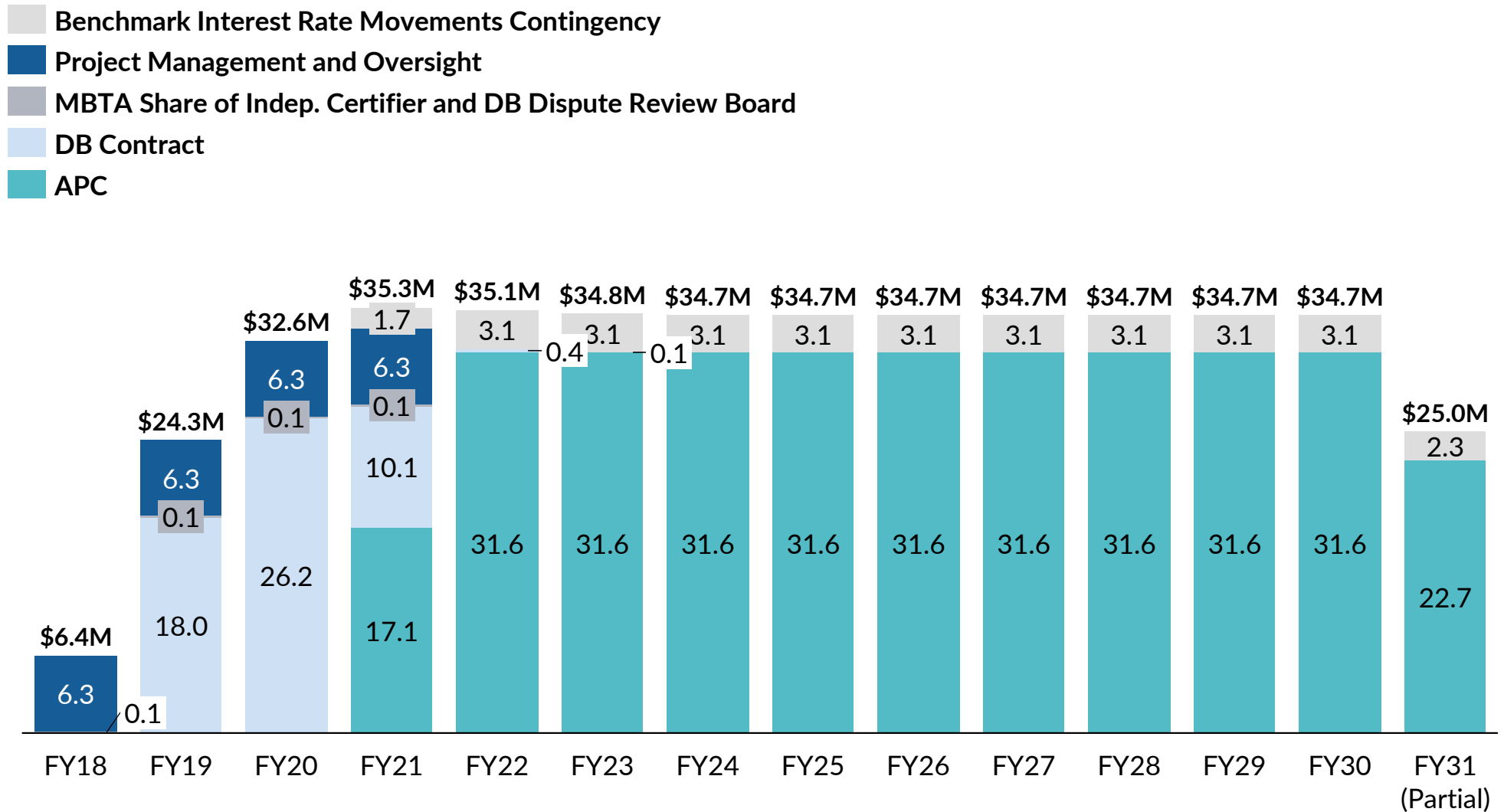
AFC 2.0 FULLY FUNDED IN APPROVED CIP, SUBJECT TO BENCHMARK INTEREST RATE MOVEMENT

- Benchmark Interest Rate Movements Contingency
- Project Management and Oversight
- DB Contract (Estimate)
- MBTA Share of Indep. Certifier and DB Dispute Review Board
- APC



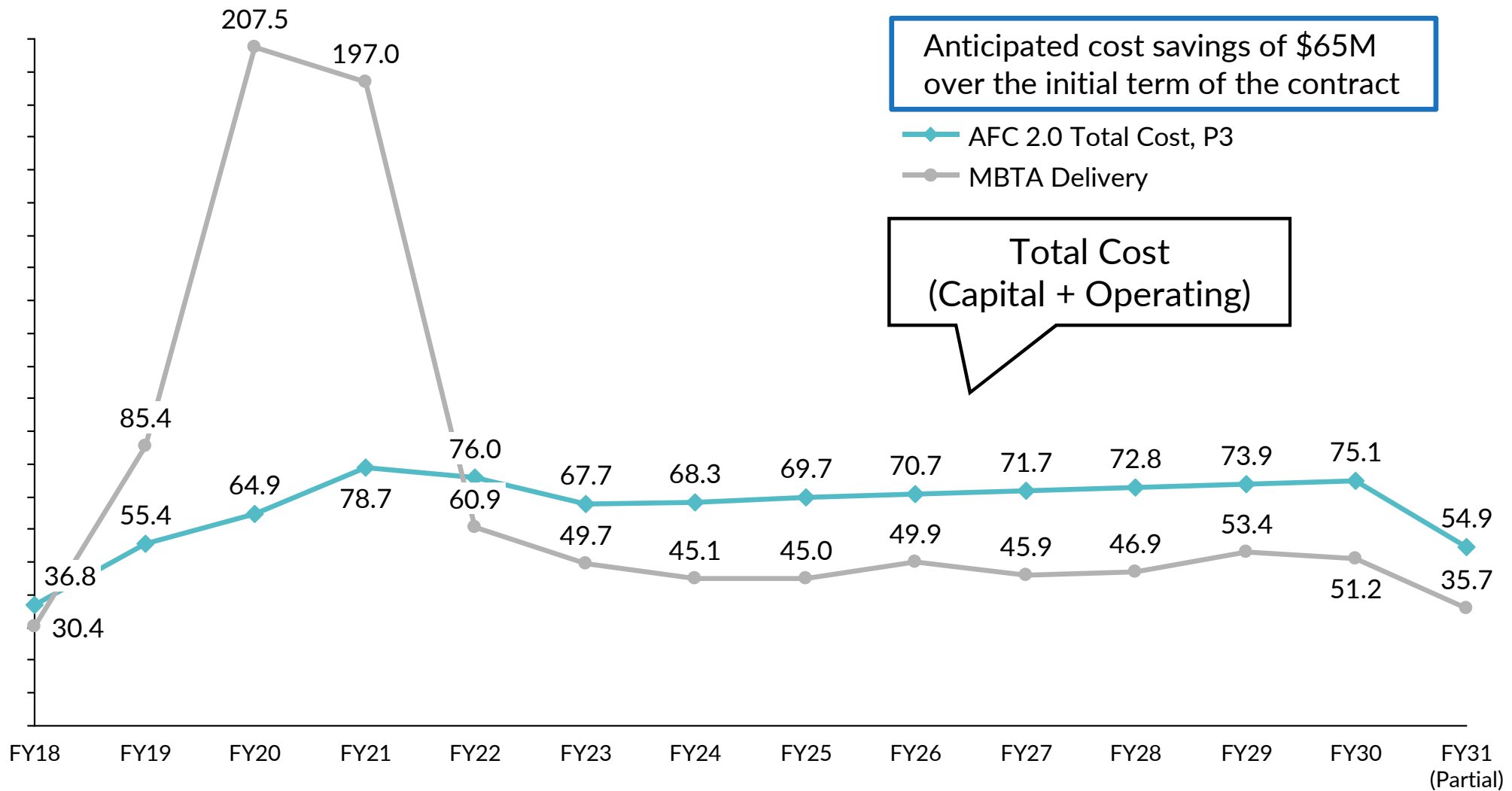
Capital fund expenditures

FULLY FUNDED CAPITAL EXPENDITURES EVENLY DISTRIBUTED ACROSS INITIAL TERM



AFC 2.0 vs. MBTA delivery

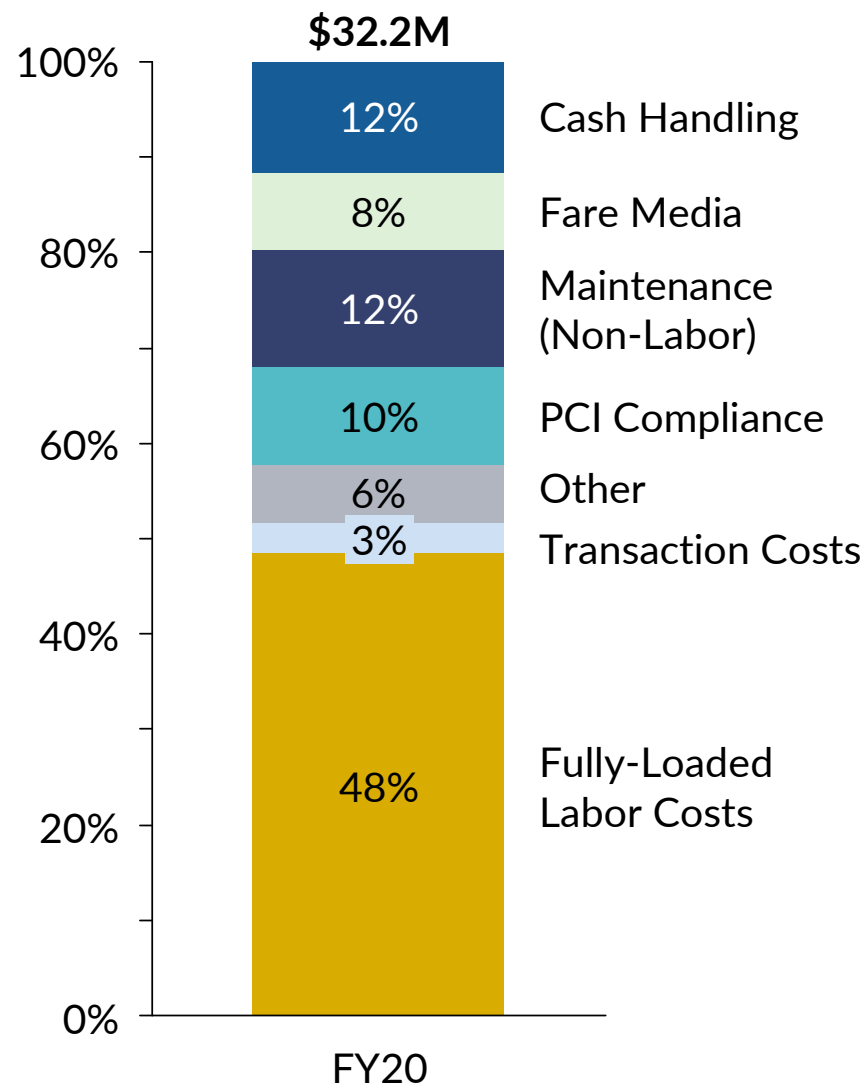
THE AFC 2.0 PROJECT IS FORECAST TO BE CHEAPER THAN THE ESTIMATED COST OF DELIVERING THIS SYSTEM AS A TYPICAL CAPITAL PROJECT, WITH A MORE EVEN COST PROFILE, AND A LOWER RISK OF OVERRUNS



Current system operating cost

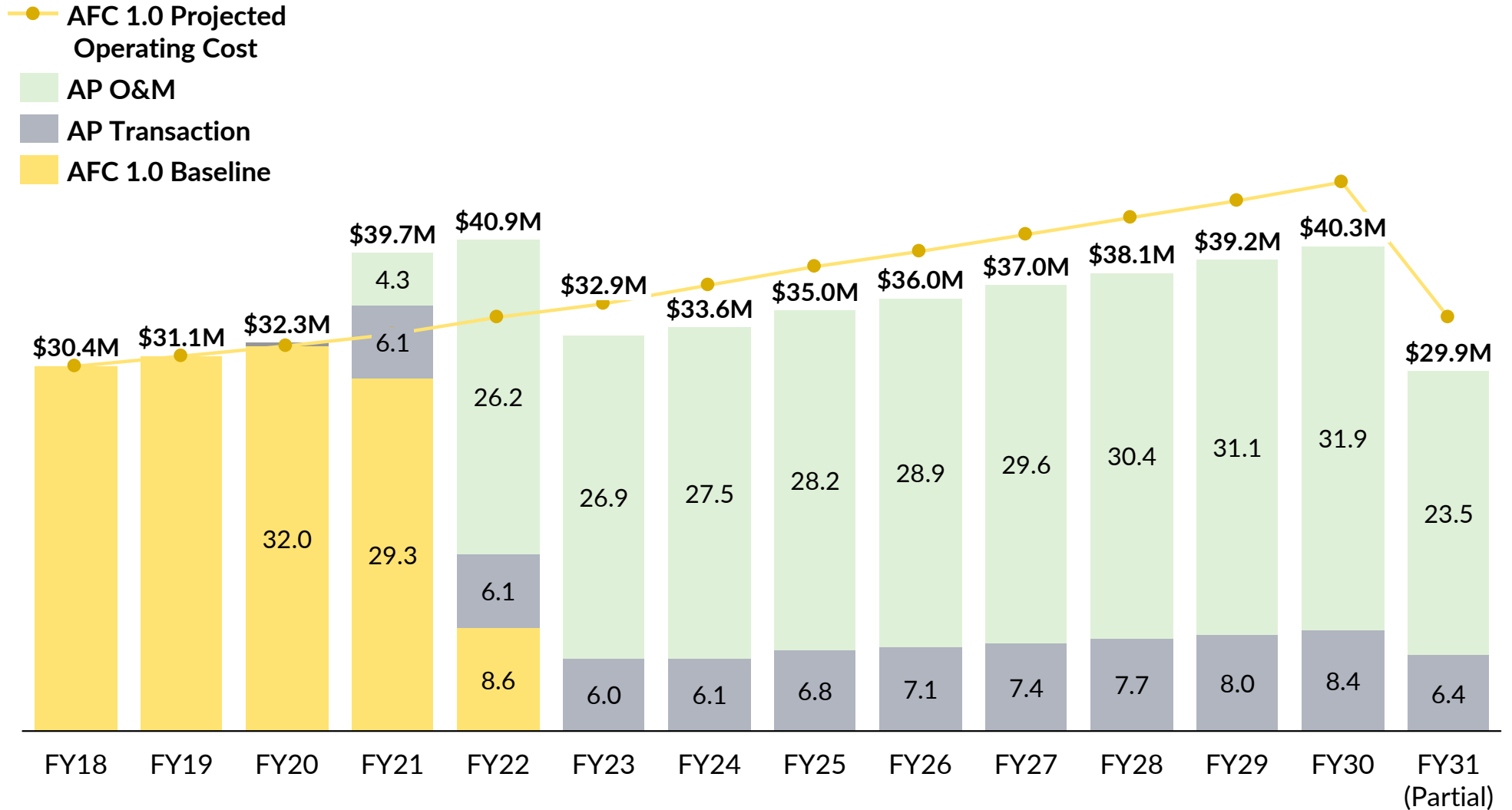
PROJECTED FY20 COST FOR CURRENT SYSTEM OPERATIONS EXCEEDS \$32M

- Value of the scope that will be transitioned from MBTA to the SI is about \$32M per year.
- Labor costs make up about half of this total. Cash handling, system administration and PCI compliance, and fare media also account for significant costs.
- This operating cost does not include any of the reinvestment that would be necessary to extend the useful life of the system.



Operating cost impact

AFC 2.0 OPERATING COSTS LOWER THAN ANTICIPATED CURRENT SYSTEM COST GROWTH; COSTS OVERLAP IN FY21-22 AS TRANSITION OCCURS



Current system

Maintenance personnel

- Meetings between management and IBEW 103 regarding training and transitioning current maintenance staff to other power and signals work over time are ongoing. There is currently \$300M in the approved CIP funding (next five years) for electrical work
- AFC Technicians will still be needed for AFC 1.0 maintenance while that system is in use, through early 2020
- There are currently thirty six Local 103 personnel working in AFC 1.0; four have transitioned to other departments

Comparison to other agency contracts

MBTA CONTRACT SIMILAR TO OTHER AGENCY CONTRACTS; INCLUDES A GREATER SCOPE THAN THE RECENTLY AWARDED MTA CONTRACT

- Included in award amount
- Partial, future, optional, or costs not included in award amount

	Boston 	New York 	Chicago 	Philadelphia 	Vancouver, BC 
Year awarded	2017 (planned)	2017	2011	2011	2011
Published value, with known amendments	\$723m (proposed)	\$573m	\$519m	\$141m	\$220m
Service area population	3.1m	8.5m	3.3m	3.8m	2.5m
Base ops & maintenance term	10 years	7 years	10 years	1 year	10 years
Implementation financing with ongoing performance payments	●		●		
Cash collection and servicing	●		○	○	○
Bank card processing & fees	●	○	●		○
Field equipment maintenance	●		○	○	●
Retail network & commissions	●	○	○	○	○
New account-based back office	●	●	●	●	●
Back-office maintenance	●	●	●	○	●
New station vending machines	●	○	●	●	●
New gates/turnstiles	●			●	●
All-door boarding validators	●	○			●
Streetscape vending machines	●	○			

Next steps

Today

Possible vote to authorize System Integrator contract Award

Next week

Sign Early Works Agreement

Within the next 10 days

Begin work under the Early Works Agreement

The project contractor (a sub to the SI) begins working on the design immediately upon selection

January 2018

Begin updates to board on progress every other month

By March 2018

Financial Close and Commercial Close

The contract is signed and we begin working with the Systems Integrator. Implementation work continues under the Project Agreement.

Late 2018

Planned DB contract Date of Award

Starting late 2019

Pilots

May 2020

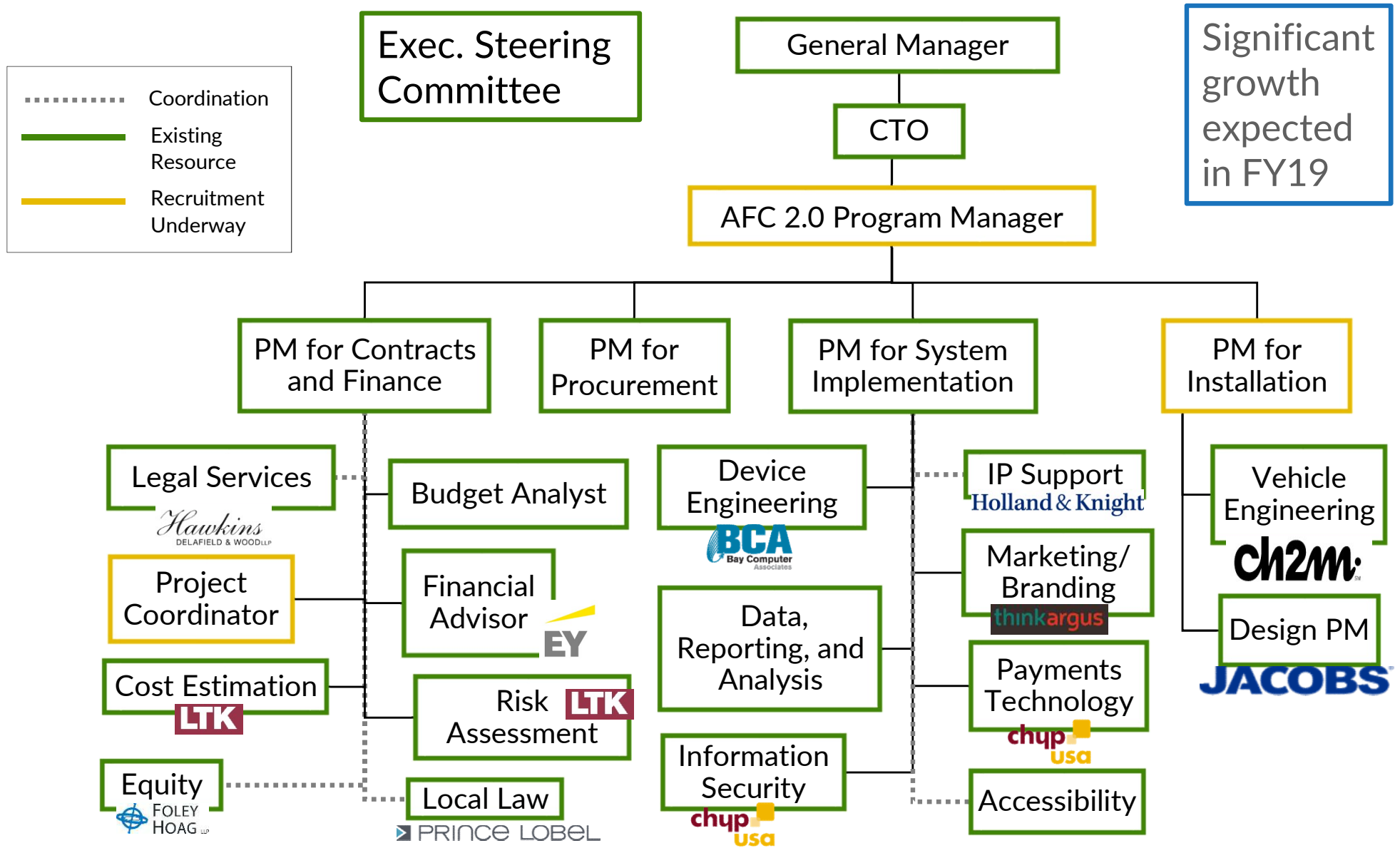
Revenue Service Commencement

May 2021

Full Service Commencement



AFC 2.0 PMO: FY18



Vote to award

THE FISCAL AND MANAGEMENT CONTROL BOARD OF THE MASSACHUSETTS BAY TRANSPORTATION AUTHORITY (“MBTA”) IS ASKED TO APPROVE THE FOLLOWING IN RESPECT OF THE PROJECT AGREEMENT FOR AUTOMATED FARE COLLECTIONS SYSTEM SERVICES (THE “PROJECT AGREEMENT”) PURSUANT TO THE MBTA’S REQUEST FOR PROPOSALS NO. 88-16 (THE “RFP”):

1. Approve the award of the Project Agreement to the Cubic | John Laing consortium (the “Consortium”);
2. Authorize the General Manager to enter into the Project Agreement, in such final form as may be approved by the General Counsel following negotiations pursuant to the RFP, with a special purpose entity to be formed by the Consortium, as contemplated by the RFP and the proposal submitted by the Consortium in response thereto (the “SI Entity”), for a total estimated amount of \$723,297,151 (the “Contract Amount”), which is comprised of monthly availability payments (including payment for capital costs, operating costs and transaction costs) which ramp up as the System becomes fully operational, costs relating to the MBTA’s portion of the payment of the Independent Certifier, costs relating to the MBTA’s portion of the payment of the DB Dispute Review Board, costs relating to the MBTA’s portion of the payment of the Independent Payment Consultant, and a contingency for costs relating to benchmark interest rate movements;
3. Authorize the General Manager to enter into the Financial Close Amendment, as contemplated by the RFP, with the SI Entity in such final form as may be approved by the General Counsel and subject to the Contract Amount; and
4. Authorize the General Manager to enter into certain ancillary agreements contemplated by the RFP, including the Early Works Agreement, the Lenders’ Remedies Agreement, the Material Contract Direct Agreement, the Independent Certifier Agreement, MBTA Standard Non-Disclosure Agreements, the DB Dispute Review Board Agreement, and all other contracts, documents and agreements as may be necessary to effectuate the Project Agreement and carry out the responsibilities of the MBTA thereunder, all in such final form as may be approved by the General Counsel; provided that such authorization is subject to the Contract Amount and does not authorize the General Manager to enter into the separate DB Contract contemplated by the RFP.