Train Control Upgrade Project

Project Update

SFMTA Board of Directors
August 2, 2022

Muni's train control today

Subway Automatic Train Control System (ATCS)

- Went into service in 1998

- System keeps vehicles safely spaced

- Operators open/close doors, but all other movements are automated

- ATO (automatic train operation) significantly improved Muni Metro performance

- Increased throughput and reliability in the tunnel over previous manual operations

Surface Independent Operation

- Vehicles on the surface are fully controlled by operator

- Signals and switches are activated by operators and controlled by independent wayside computers

- Routes are requested as trains are detected by the "VETAG" signal priority system, and assigned first come, first serve

- Limited tools for spacing management

Current conditions

Before the pandemic, Muni Metro service regularly experienced delays and crowding, in large part due to the design and the age/condition of the train control system

Design

Non-communicating trains

Bunching/gaps

Subway congestion

Inflexibility of software

Age/condition

ATCS computer failures

Communication failures (ATCS)

Availability Of parts
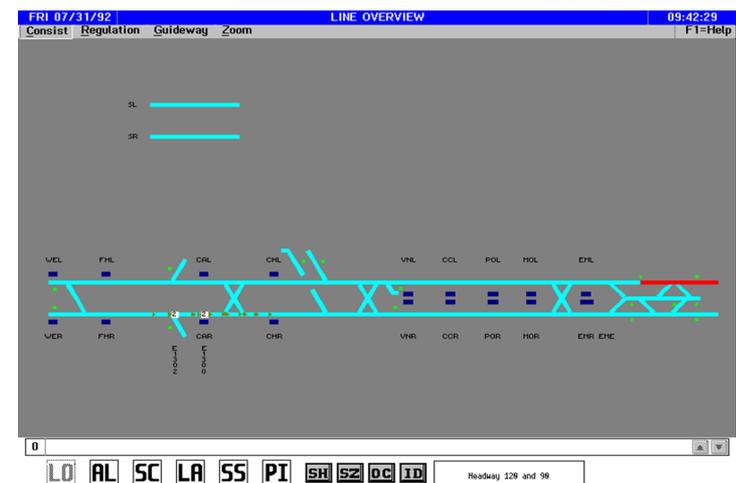
ATCS wayside failures (age)

Current conditions

ATCS approaching 30 years old, designed in the 1980s

Initial procurement treated as one-time investment, something not to be touched for 30 years

Parts and software are becoming increasingly obsolete and difficult to source

Components fail regularly, fewer and fewer people have expertise on the system

The Train Control Upgrade Project

Multi-year upgrade and expansion of communications-based train control (CBTC) to improve Muni light rail service.
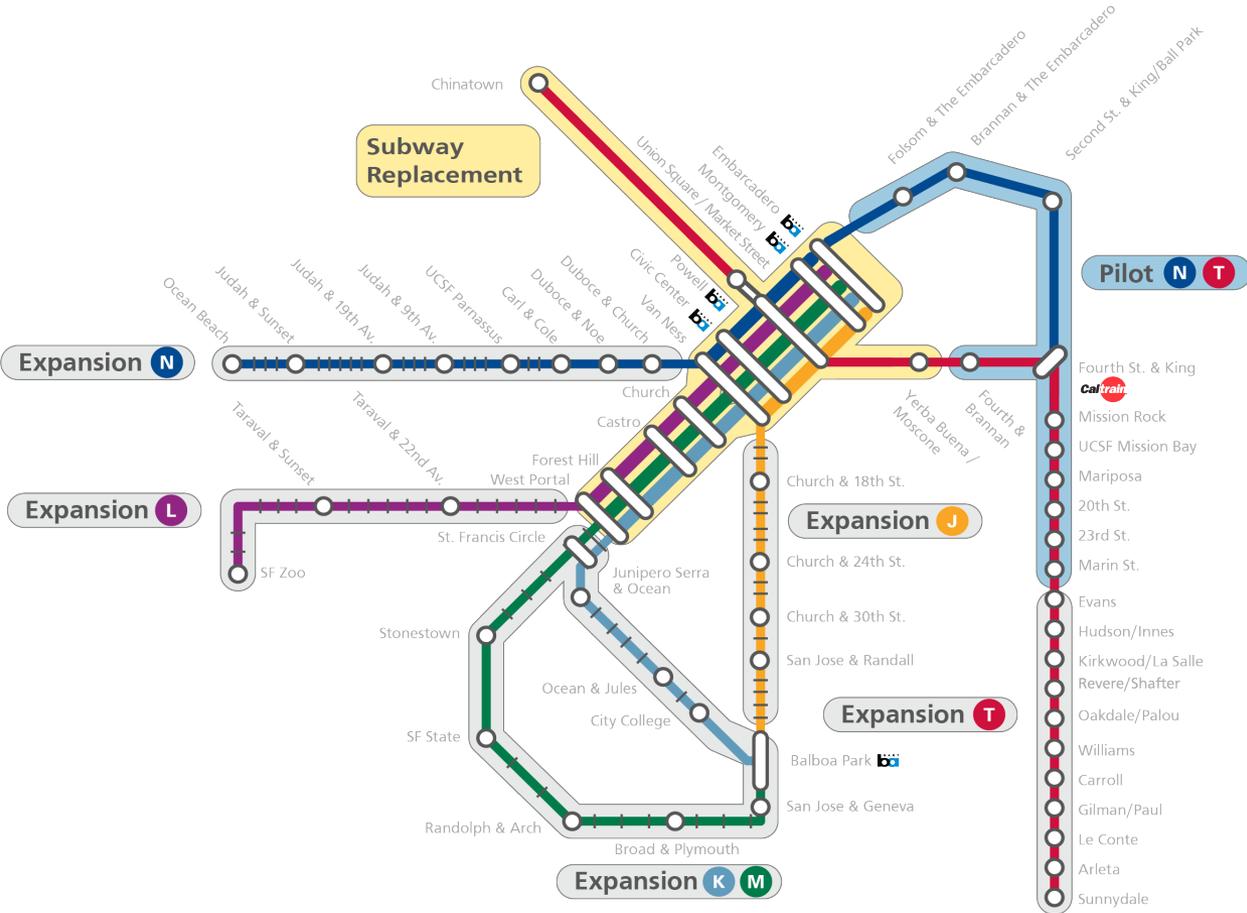
Project phases

Pilot phase

- Limited street-running area to validate the new CBTC system

Replacement

- Replaces the existing ATCS in the subway

Expansion

- Expands CBTC system to surface lines

Key Project Objectives

Increase the capacity of the Muni Metro system

Maintain the high standards of safety currently provided by the ATCS in the subway and extend modern safety protections to the surface

Enable shorter, more consistent travel times and headways

Provide a reliable train control system that supports the entire Muni Metro network

Support configurable and flexible service changes and contingency operations

Continually update the new system to include the latest service-proven components and software

Enabling technology

Centralized Network Management

Service Management Tools

Wireless Communications

Data and Diagnostics

Modern Computers

Spare parts and technical support

Traffic Signal Integration

Software Upgrades

Project Management Strategies

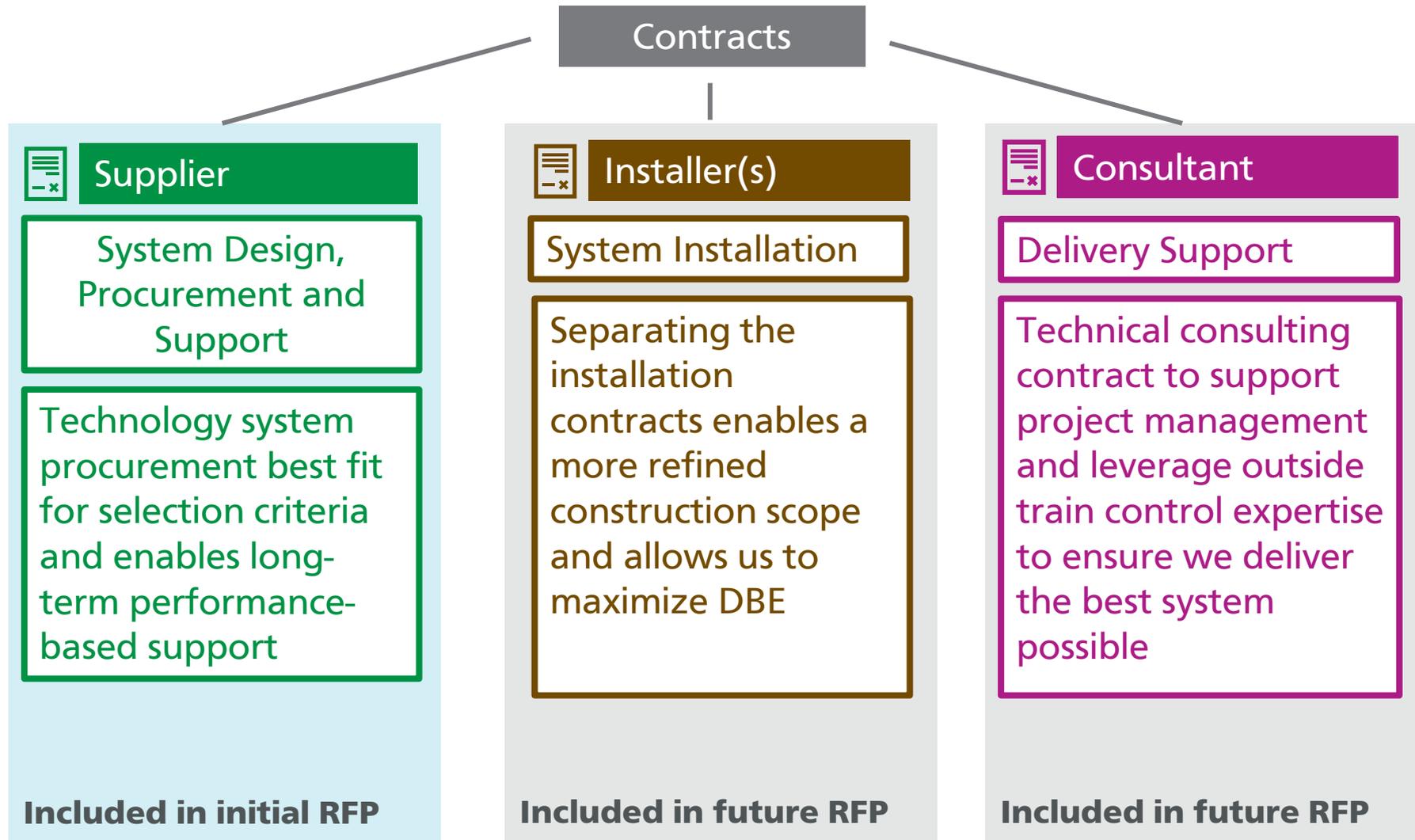|	
Procurement Method	Separate contracts for Supplier, Installers allow us greater control over the choice of system
Lessons Learned	Planning and project strategy based on past experience with train control and future needs
Supplier Partnership & Performance Incentives	CBTC Supplier will be incentivized to partner in the success of the system
Support-Focused/ Lifecycle Management	Treat the system as a technology product, hardware and software kept up-to-date

Contracting method

Contracts

Supplier

System Design, Procurement and Support

Technology system procurement best fit for selection criteria and enables long-term performance-based support

Included in initial RFP

Installer(s)

System Installation

Separating the installation contracts enables a more refined construction scope and allows us to maximize DBE

Included in future RFP

Consultant

Delivery Support

Technical consulting contract to support project management and leverage outside train control expertise to ensure we deliver the best system possible

Included in future RFP

Proposed Project Schedule

PHASE	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
System Design	NTP Fall 2023										
Pilot											
Subway Replacement											
Surface Expansions											
Support/Lifecycle Investment											
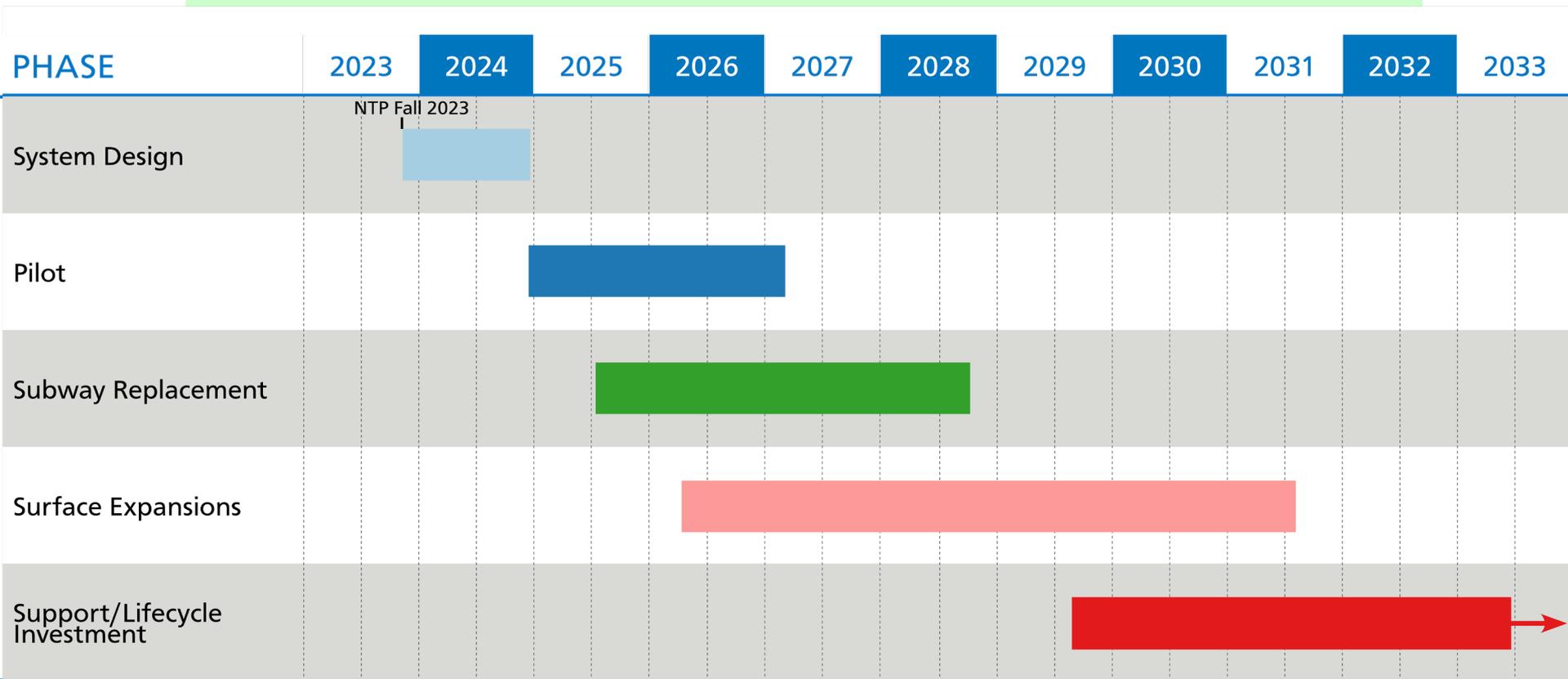
Total Project Budget: $560 million

Support Costs: $100 million over 10 years

Next Steps

- Finalize the RFP

- Bring the RFP to SFMTA Board this fall for approval

- Request a waiver from Board of Supervisors for a contract exceeding 10 years

- Release RFP by late 2022

Questions?