Train Control Upgrade Project

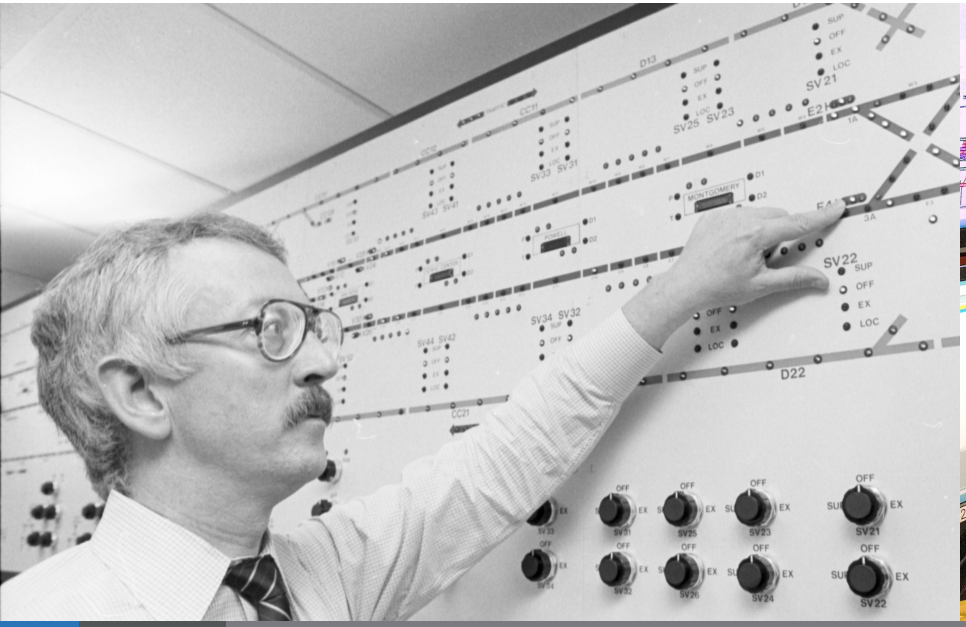
SFMTA Board of Directors

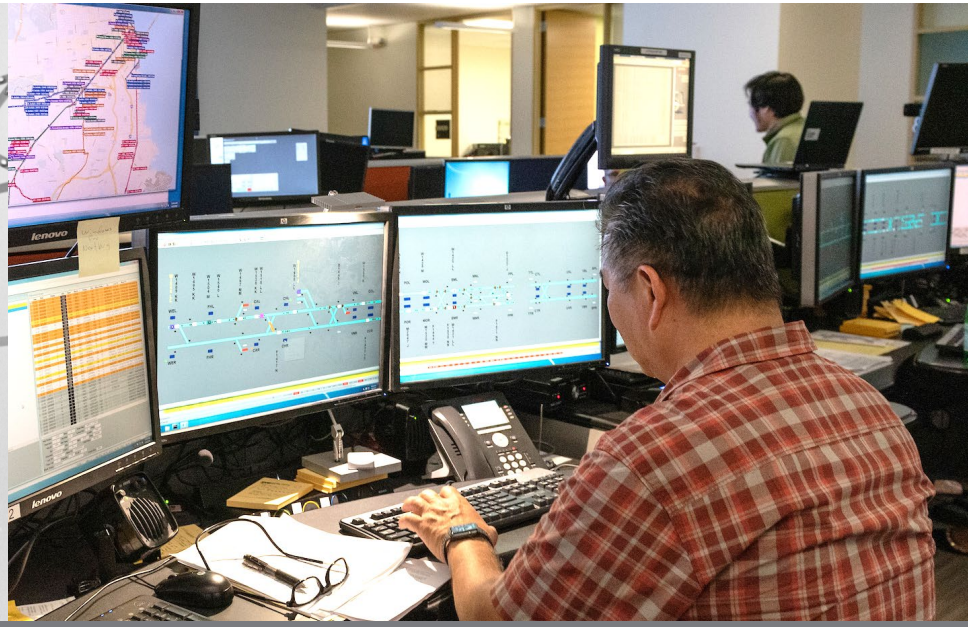
October 15, 2024

Train Control Upgrade Project

San Francisco's most significant Muni Metro investment in a generation.

This project will replace the technology that makes Muni Metro work and make a quantum leap forward in fast, frequent, reliable Metro service and transit connections citywide for decades to come.





What we will ask the SFMTA Board of Directors to approve on October 15:

CBTC Supplier contract:

Contract No. SFMTA-2022-40 FTA with **Hitachi Rail GTS USA** for design, furnishment, system implementation, support and related services for a Communications-Based Train Control System (CBTC):

- Nine years of **design and procurement** (the span of the project) **not to exceed $212,093,633**
- Ten years of **required support services** after the project ends, **not to exceed $114,070,833**
- Two five-year **additional support service options, not to exceed $237,681,185**

Learning from past projects and improving contracting approach

Separate contracts

CONSULTANT

- Support staff with project delivery

SBE/DBE goal: 15%

☑ Contract approved August 2024

SUPPLIER

- Provides technology
- Helps design system
- Must ensure technology meets performance requirements
- Provides long-term maintenance support and knowledge transfer to SFMTA staff

SBE/DBE goal: 5%

INSTALLERS

- Multiple installers shorten construction timeline

SBE/DBE goal: 100% (preliminary)

Future RFQ followed by individual bids

Supplier: Hitachi Rail GTS USA

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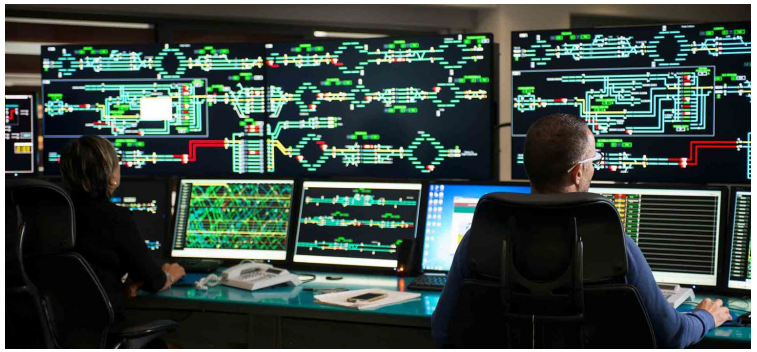
Benefits:

- Hitachi has the most advanced technology of the bids received
- Only Hitachi offers transponder-based train control communication technology on street and in subway
- Hitachi can reuse existing computers on LRV4s, reducing vehicle integration cost and risk
- Hitachi's wayside equipment is smaller and can be centrally located, reducing clutter on the street and making maintenance easier
- SFMTA is familiar with this supplier and has structured contract to apply lessons learned



Better outcomes from competitive, negotiated procurement

Contract wins for the SFMTA

Negotiated procurement process allowed for discussion with industry. Vendors understood project needs better. Lead to better proposals.

Annual software updates

- Keeps the new train control system up to date.

Long-term support included in contract

- Recognizes that a new train control system is a 30-year investment. Includes all future spare parts.

Performance goals based on outcomes

- Builds performance into contract. Incentivizes supplier to build quality into the design up front and encourages supplier to invest support resources to ensure the new train control system works properly.

Knowledge transfer

- Creates a pathway to build in-house expertise for greater self-sufficiency.

Train Control Supplier Market

Request for Information phase: 8 suppliers responded

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富欣智控 自主创新 绿色智能 (FiTSCO) UniTTEC UniTTEC Co., Ltd CRSC China Railway Signal & Communication Co., Ltd.

Meet Federal requirements: 5 suppliers

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Mergers: 3 suppliers in the market

SIEMENS

ALSTOM + BOMBARDIER

HITACHI Inspire the Next + THALES

Request for Proposals phase: 2 suppliers submitted bids

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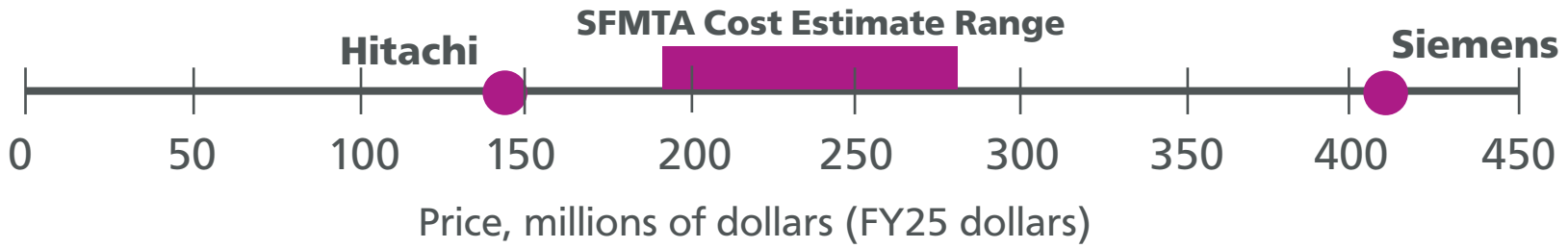
Supplier Selection Outcome

Hitachi's proposal outperformed Siemens in both the technical approach and price. In the BAFO, Siemens' capital procurement price was almost three times higher than Hitachi's and their ongoing support services price was 1.5 times higher.

Evaluation Scores (out of 100)	Round 1	BAFO
Hitachi Rail GTS USA	76.09	73.45
Siemens	55.13	58.36

Bid Prices (Capital Procurement)



Supplier Deliverables

Design: Hitachi will customize their baseline latest-generation train control technology to SFMTA's specifications

Installation Management: Hitachi delivers new train control components and monitors installation

Testing: Hitachi performs testing to ensure the system meets performance requirements

Long-term support: Hitachi provides maintenance support, training to SFMTA staff, and continues to monitor performance

Train Control Components

Train Control System - SelTrac™

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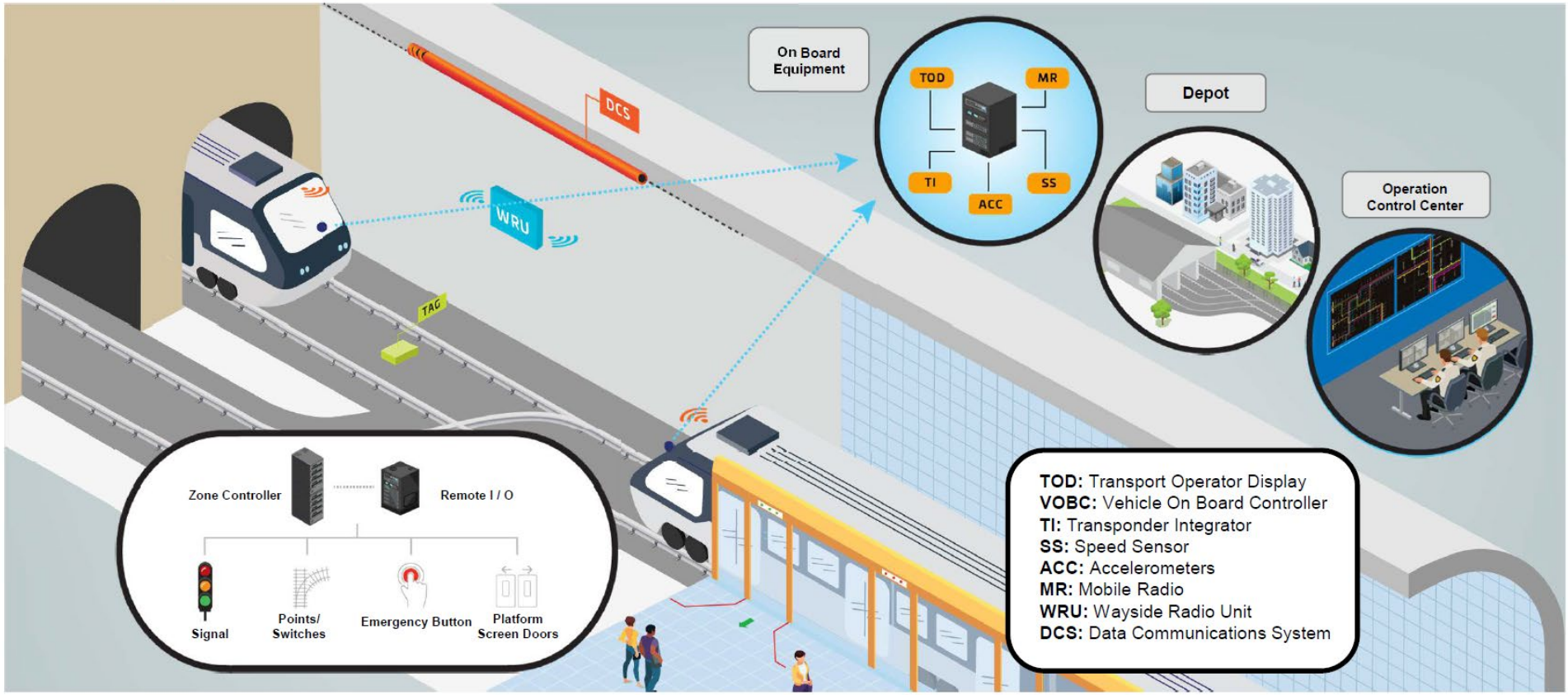


Long-term Support

Design-Furnish-Support contract with up to 20 years of on-site technical support and performance-based requirements.

29-year contract		
Procurement: 9 years	**Base Support: 10 years**	**Two 5-year Support Options**

- Train SFMTA staff to use and upkeep system
- Help SFMTA staff troubleshooting issues
- Includes unlimited spare parts as needed to maintain the train control system
- Includes automatic annual software updates

Transparent, full scope investment

TCUP is the first project to plan for and build in support costs up front.
The Not-To-Exceed amounts presented below assume 6% escalation per year (contract maximum) but contract costs would be adjusted based on actual inflation.

Train Control Supplier Contract – Not-to-Exceed Amounts	
Total Procurement including Options (TCUP Capital Budget)	**$212,093,633**

**This project cost is already funded in the TCUP $700M funding plan, through capital funds than cannot be used to fund Muni service.*

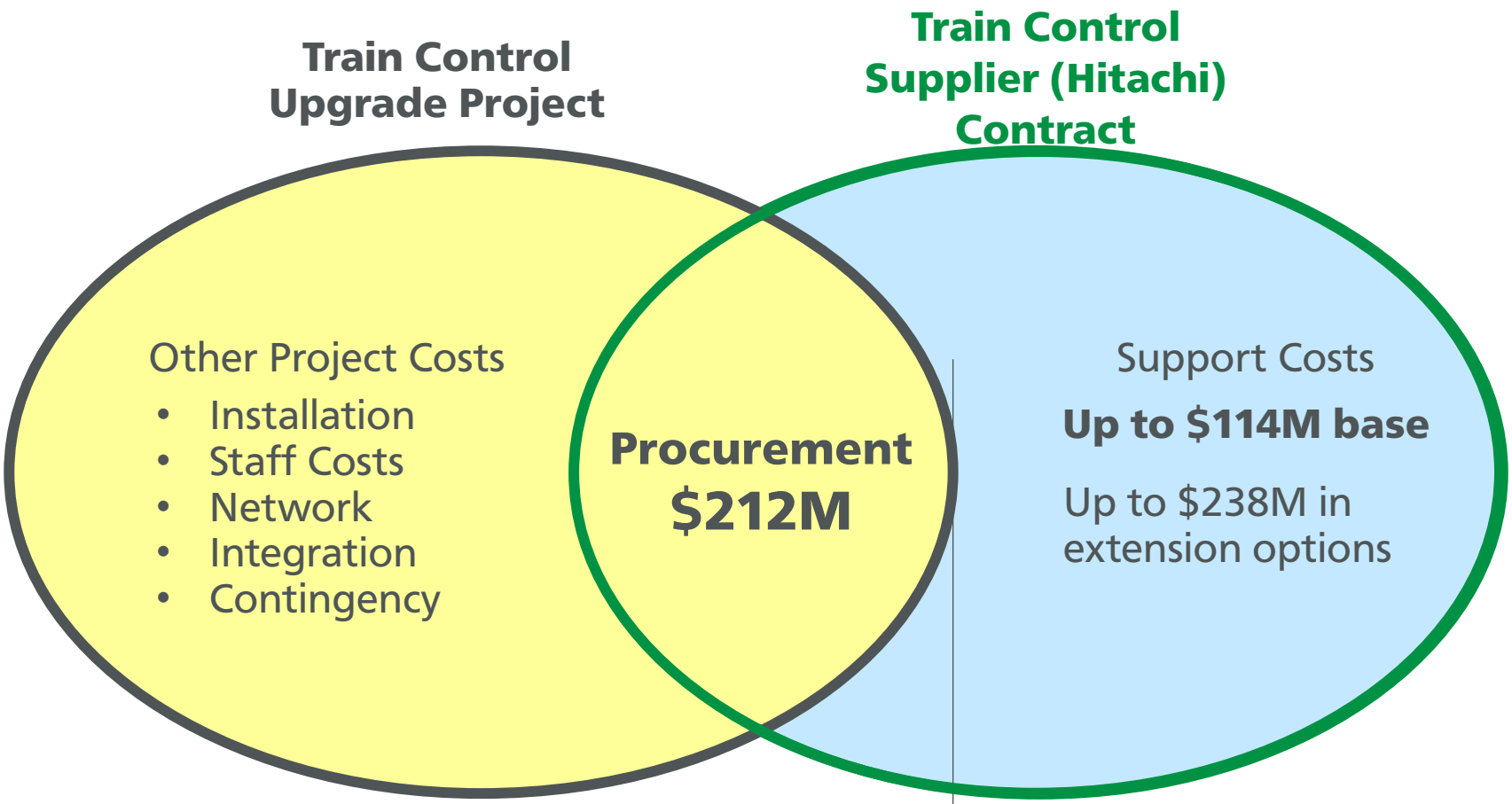
Total Initial Support (FY32-44 Operating Budget)	**$114,070,833**

**We know we will need continual support and some of this cost absorbs what we already pay in support for the current system.*

Total Support Options (FY45-54 Operating Budget)	**$237,681,185**

**Structuring as options give SFMTA flexibility to revisit support based on needs in ten years.*

Allocation of Contract Costs

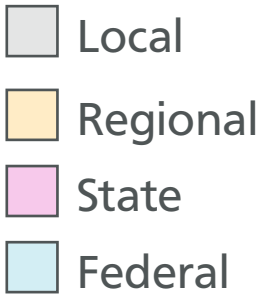


TCUP Capital Budget

Item	Budget
Train Control Supplier Contract (This Contract)	$212M
Consultant Contract (Approved Aug 2024)	$30M
Installation Contracts	$99M
Project Management and Engineering	$102M
Network Infrastructure and Systems Integration	$64M
Testing, Training and Operational Support	$53M
Contingency (~25%)	$140M
Total Train Control Capital Budget	**$700M**

Project Funding Plan

Total Project Budget	$700,000,000
2021 Revenue Bond	$24,500,000
Prop B (General Fund)	$30,000,000
TSF Developer Fee	$12,000,000
Prop L	$16,000,000
GO Bond	$30,000,000
AB 664	$1,500,000
TIRCP Grant	$130,000,000
SB 1 (State of Good Repair)	$25,000,000
FTA (Transit Capital Priorities)	$375,000,000
Funding Need	$56,000,000



Roadmap to Notice to Proceed

MTA Board: Aug 6

Board of Supervisors: Sep 17

NTP (Consultant): Nov

Consultant Contract

Supplier Contract

MTA Board: Oct 15

Board of Supervisors: Nov

NTP (Supplier): Jan

Roadmap from Notice to Proceed to initial installation

Supplier NTP: January 2025

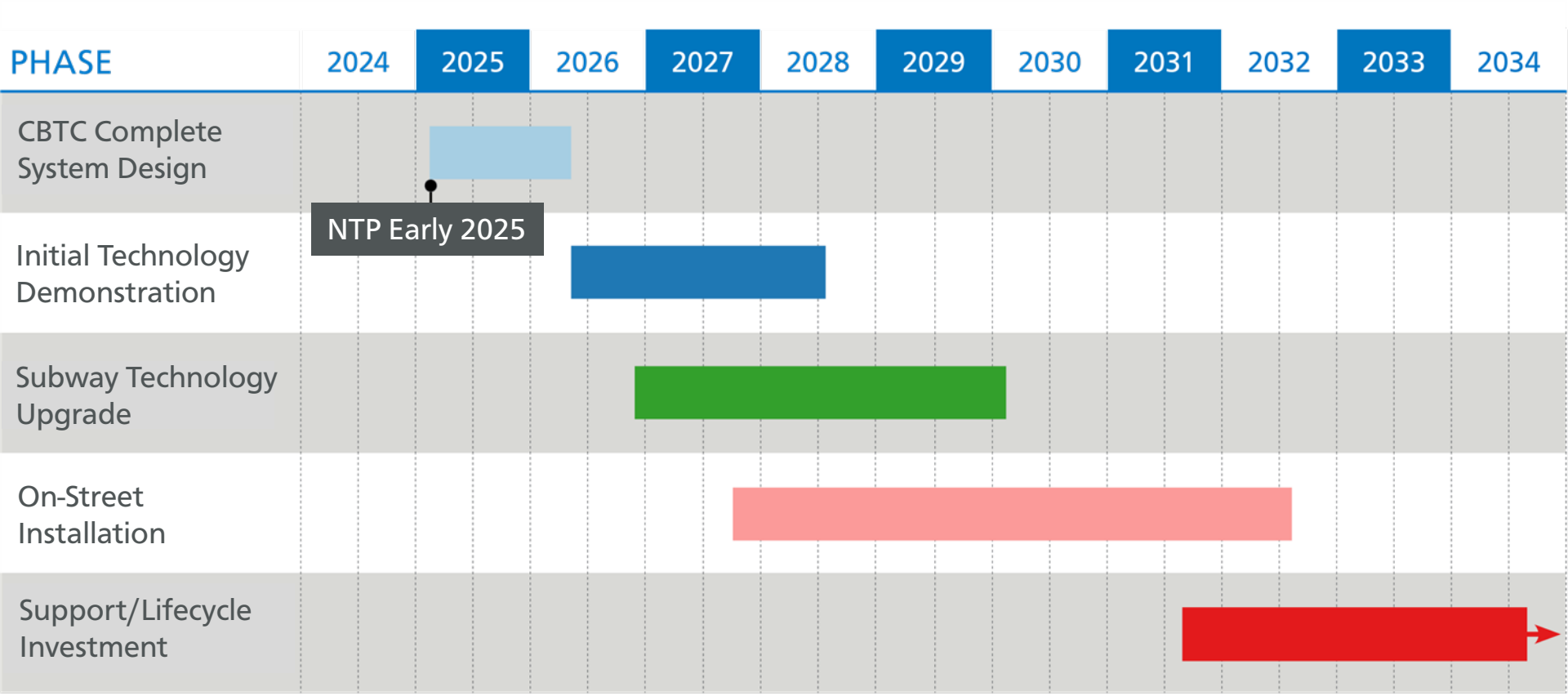
Deliver design: Spring 2026

Begin initial installation: 2027

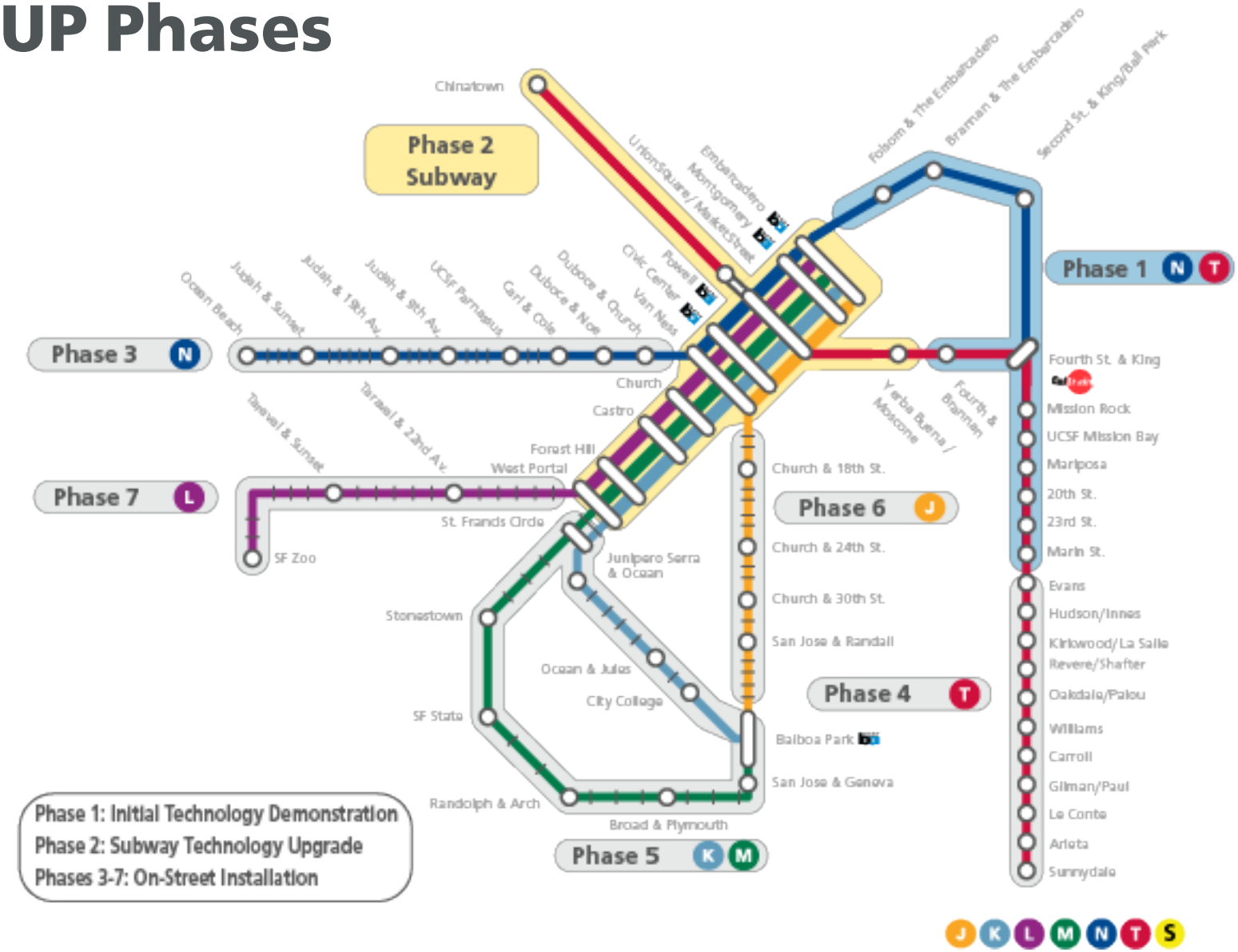
Testing: 2028

Complete initial installation: Late 2028

Train Control Upgrade Project Timeline



TCUP Phases


Phase 2
Subway
Phase 1
Phase 3
Phase 7
Phase 6
Phase 4
Phase 5
Chinatown
Union Square/Market Street
Embarcadero
Montgomery
Powell
Civic Center
Van Ness
Folsom & The Embarcadero
Brannan & The Embarcadero
Second St. & King/Ball Park
Ocean Beach
Judah & Sunset
Judah & 19th Av.
Judah & 9th Av.
UCSF Parnassus
Carl & Cole
Duboce & Noe
Duboce & Church
Church
Castro
Forest Hill
West Portal
Taraval & Sunset
Taraval & 22nd Av.
St. Francis Circle
SF Zoo
Junipero Serra & Ocean
Stonestown
SF State
Ocean & Junes
City College
Randolph & Arch
Broad & Plymouth
Balboa Park
San Jose & Genova
San Jose & Randall
Church & 30th St.
Church & 24th St.
Church & 18th St.
Yerba Buena / Moscone
Fourth & Brannan
Fourth St. & King
Mission Rock
UCSF Mission Bay
Mariposa
20th St.
23rd St.
Marin St.
Evans
Hudson/Innes
Kirkwood/La Salle
Revere/Shafter
Oakdale/Palou
Williams
Carroll
Gilman/Paul
Le Conte
Arleta
Sunnydale
Phase 1: Initial Technology Demonstration
Phase 2: Subway Technology Upgrade
Phases 3-7: On-Street Installation
J K L M N T S

Staff recommendation

Staff recommends that the SFMTA Board of Directors authorize the Director of Transportation to execute Contract No. SFMTA-2022-40 FTA with Hitachi Rail GTS USA for design, furnishment, system implementation, support and related services for a Communications-Based Train Control System (CBTC), for a contract term of 9 years of design and procurement with an amount not to exceed $212,093,633, followed by 10 years of support with an amount not to exceed $114,070,833, and two 5-year options to extend the support with an amount not to exceed $237,681,185, for a total contract term of up to 29 years.

Questions?

Jumping five generations forward

Our History

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1974
Where it all started

1986
G2: Driverless CBTC

1997
G4:Radio CBTC

2004
G5: TAS platform

1992
G3:New processor

2010
G6: Software defined radio

2018
G7
New wayside and onboard hardware

2015
Record order intakes year

2023
Digital/cloud based G8

New system: Generation 8

New positioning system, obstacle detection, predictive maintenance, AI

SFMTA's current system: Generation 3