



SFMTA

Train Control Upgrade Project

TCUP Committee Meeting
July 30, 2024



What we are asking the SFMTA Board of Directors to approve:

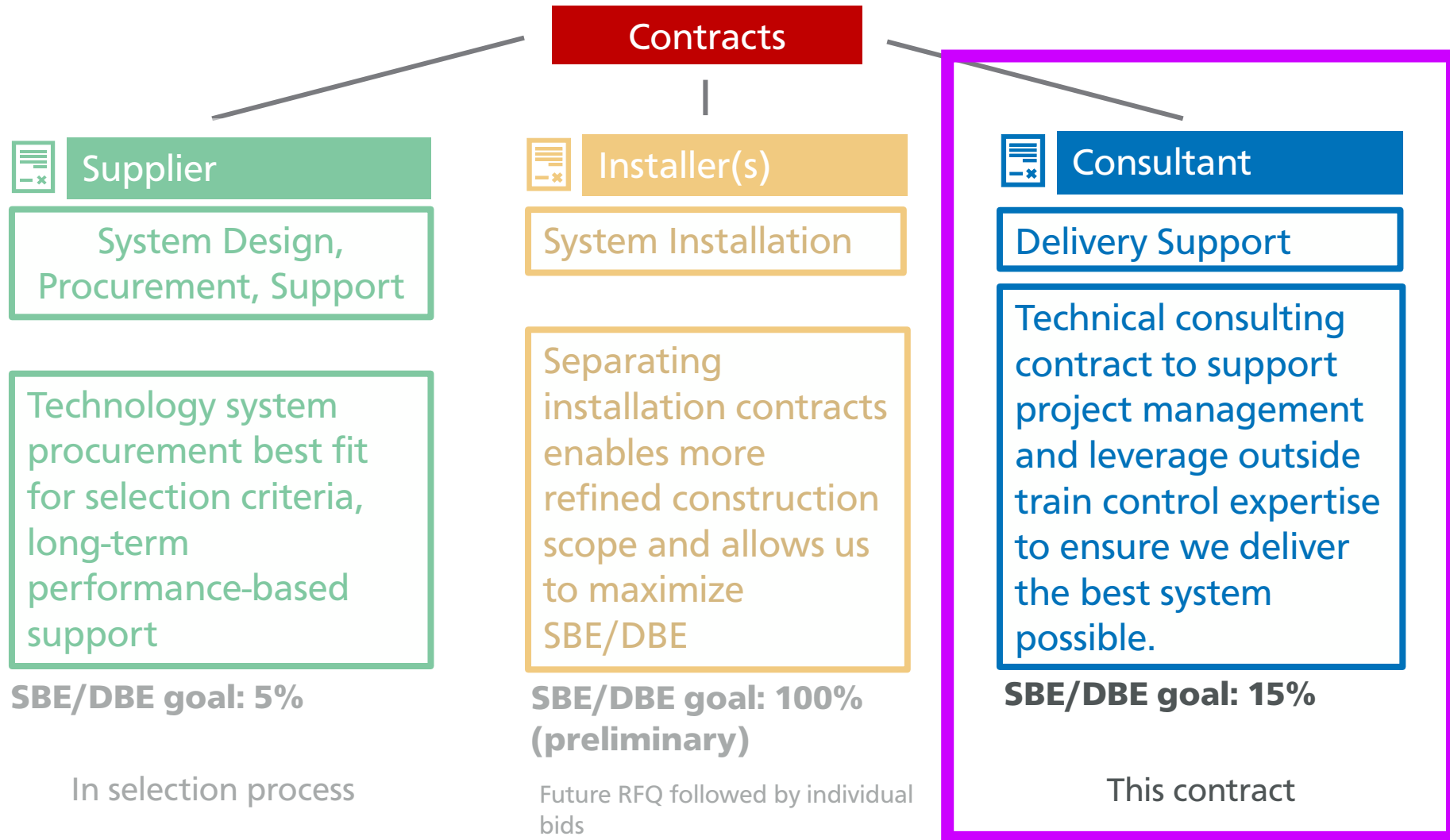
As-needed consultant services contract:

- Five-year term
- Five options to extend term an additional year, for a total of ten years
- Not to exceed \$36,000,000

Train control technical experts will assist in the **design and engineering of the new technology, quality assurance, staff training and construction management.**

Consultant will help **mitigate project risks and add capacity and expertise** to SFMTA's staff.

TCUP Delivery Strategy

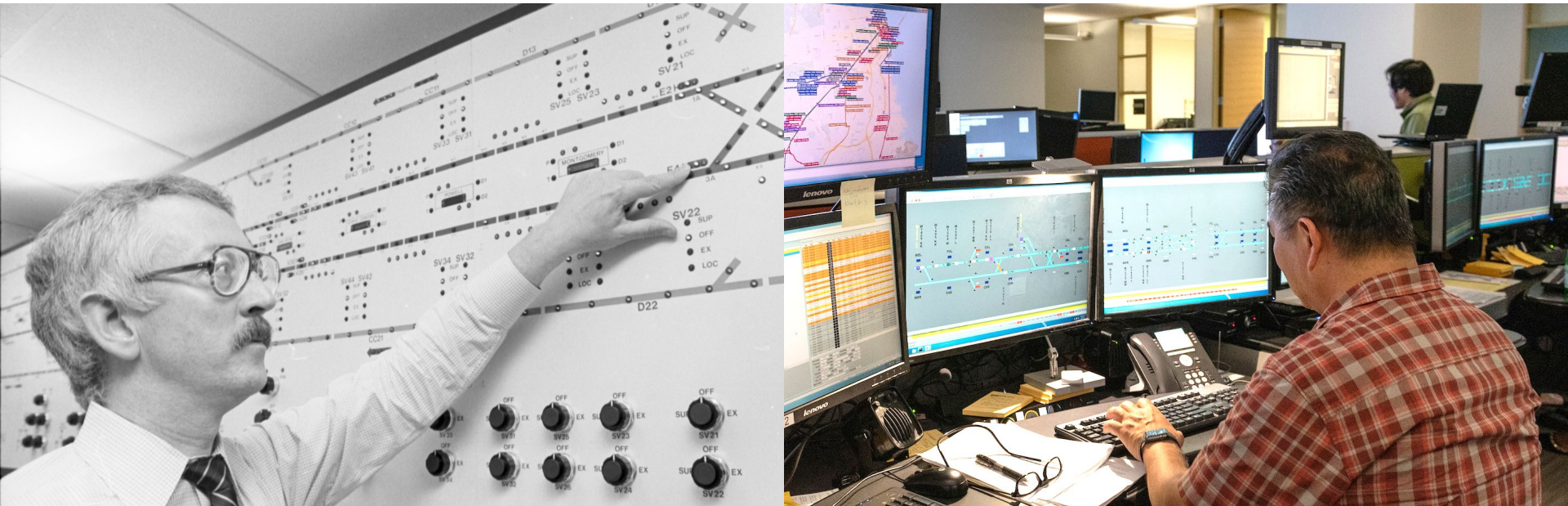




Why upgrade Muni Metro's train control?

Critical need: Replace the outdated Automatic Train Control System to prevent critical failure and keep Muni Metro running.

Unique opportunity: Modernize the technology that make Muni Metro work, improve service and enable future Metro growth. Centerpiece of subway renewal plan.





TCUP Benefits to Muni Metro Riders

Fewer delays

Customers no longer “stuck” due to subway congestion or slow-moving trains

Faster trips and less time waiting

Better traffic signal management for less waiting at red lights

More reliable service

More consistent frequencies and travel times making trip-planning more reliable

More efficient connections

Metro reliability will improve existing connections to crosstown routes and between neighborhoods

Better service management

More flexibility for train controllers to manage bunching and gaps



We are buying the benefits modern technology for more efficient Muni Metro

Without replacement, the Muni rail safety, reliability and frequency will degrade. **This project is a critical technology upgrade that makes Metro run.**

\$700M = Muni Metro continues to operate, rides are more efficient citywide

- **\$36M – Consultant to help SFMTA manage the project**
- \$240M – Supply contract for modern technology
- \$30M – Installer contract to put in the technology
- Other costs includes SFMTA labor, the work to make the new technology fit into our existing infrastructure, risk, contingency

Dollar amounts are escalated to year of expenditure



Alignment with City Priorities

- **Economic recovery**



TCUP will make Muni Metro faster and more efficient for thousands of workers and shoppers along transit citywide.

Fast, frequent, efficient transit attracts investment and economic opportunities.

- **Advancing equity**



TCUP will improve service and mobility between outer neighborhoods, education centers, citywide jobs and downtown.

Better, faster transit service benefits students, workers and low-income households.

- **Increasing job access**



TCUP will **lower travel time**, providing more access to jobs especially for people who live farther away.

- **Climate goals**



TCUP will move more people reliably and sustainably, **reducing the need for greenhouse gas vehicles** as the population grows.

Applying Lessons Learned: Performance-Based Approach

Procurement

Separate contracts for supplier, installers provides more choice

Supplier Partnership and Performance Incentives

Long-term performance, support terms part of competitive bid process

Quality, Timely, Flexible, Construction Delivery

Pool of qualified installers offers greater flexibility during construction

Using Lessons Learned

Planning and project strategy based on train control experience and future needs

Proactive Risk Management

Continually anticipate and assess risk, build into decisions, manage proactively



Consultant Contract

As-needed technical services supporting SFMTA for five years, with five one-year options to extend, not to exceed \$36,000,000.

Consultants support our key project delivery strategies



Help mitigate project risks



Support and train SFMTA technical staff to grow in-house skills



Help hold Supplier & Installer accountable

WSP/PGH Wong Joint Venture

- Local ties and international experience
- Know the Bay Area contracting environment
- Experience with SFMTA peer agencies
- Strong relationships with all likely suppliers, installers and other vendors
- Small businesses and minority-owned businesses are key part of the team



Global CBTC Experience • 8 SBE/DBE Firms • Local and National Talent

Trusted to Deliver CBTC Projects Worldwide

Experience with all 9 SFMTA-Identified Peer Transit Agencies

U.S. Peers



Canadian Peers



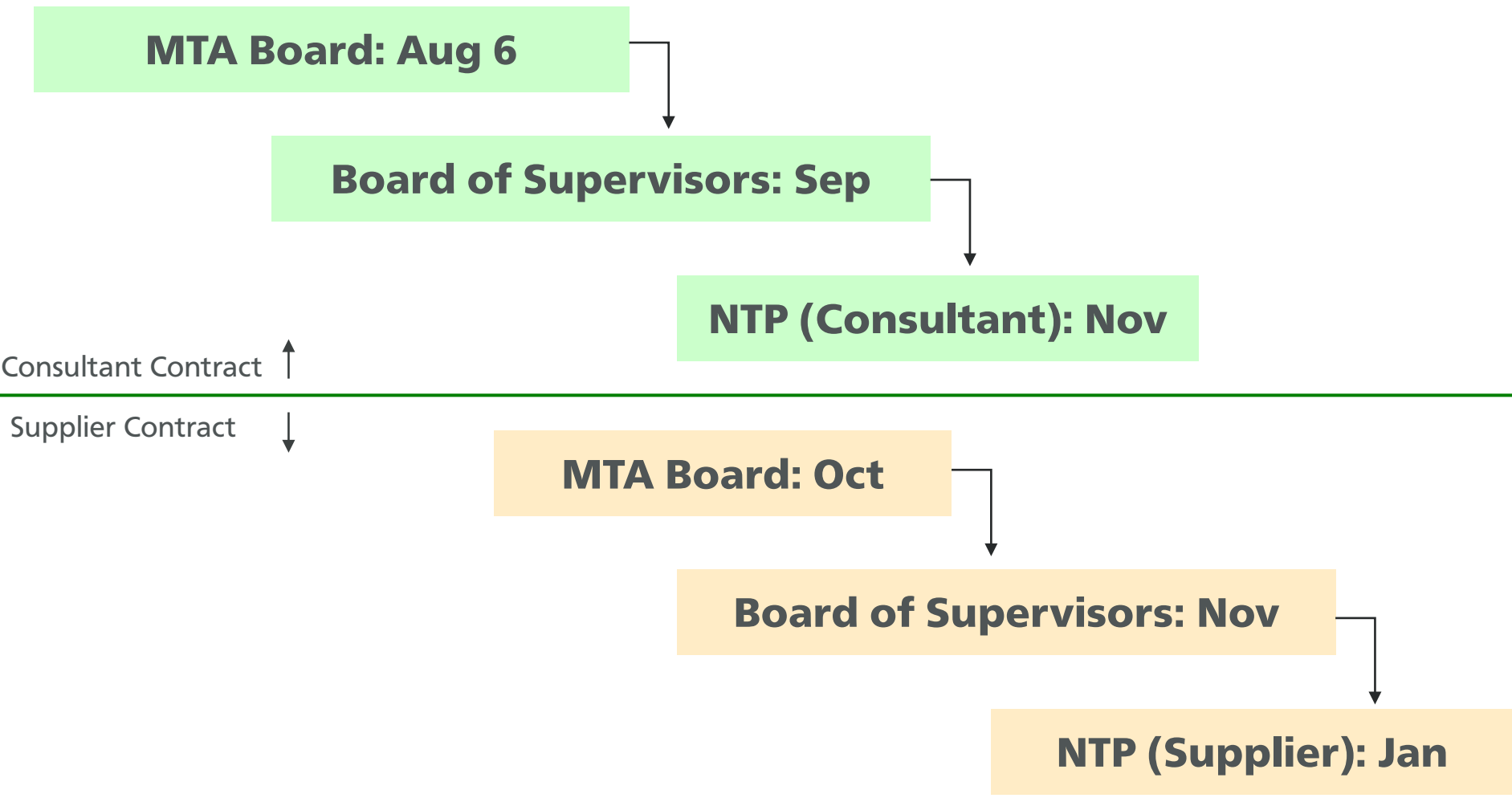
International Peers



Strong CBTC Vendor Relationships
 Extensive experience with Alstom, Hitachi Rail, Siemens and Thales. Team members include past CBTC vendor employees.

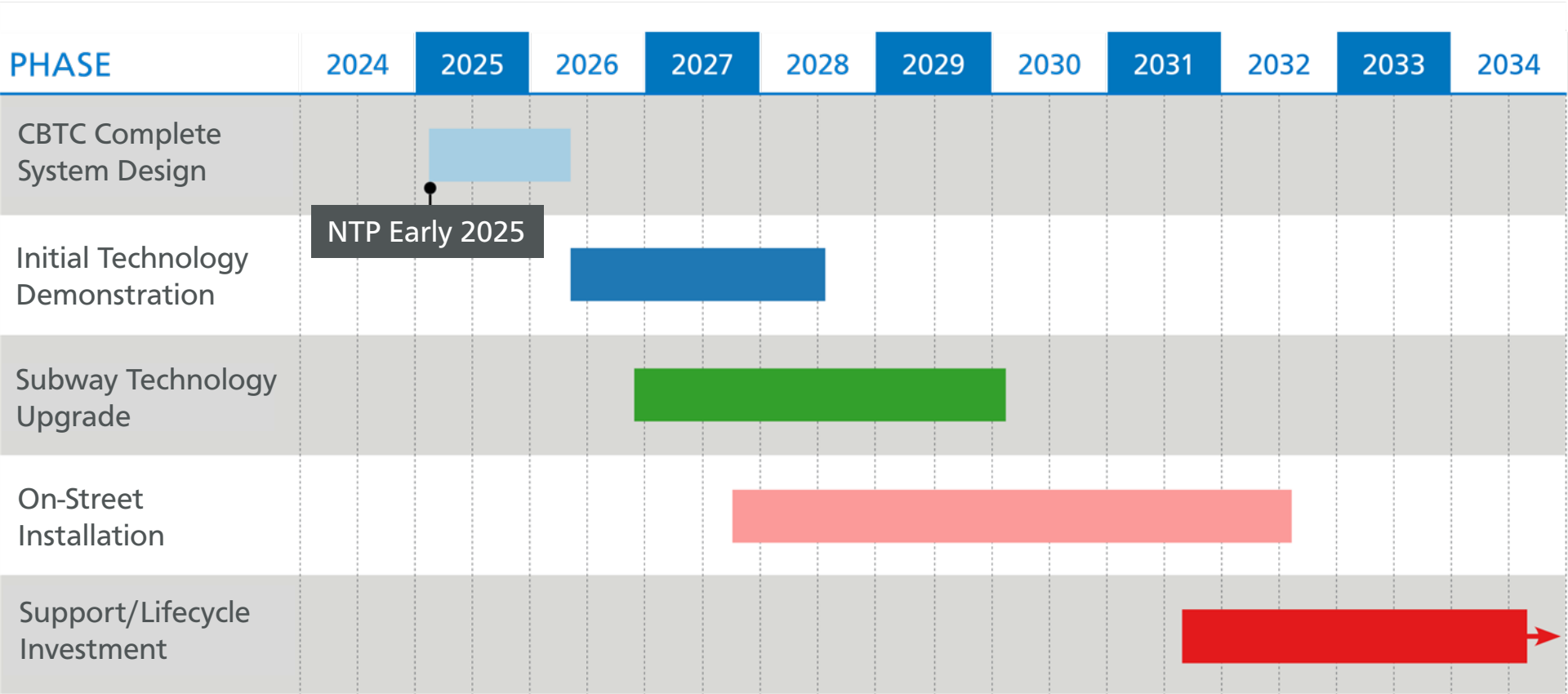


Roadmap to Notice to Proceed





Train Control Upgrade Project Schedule





Funding Approach

Capital Improvement Plan (CIP) FY25-29 Funding Plan: **\$400M**

Full Funding Plan: **\$700M**

Funding Highlights:

- Current project funding plan still relies heavily on infrastructure formula funds that are also needed for other deferred capital projects
- To date, TCUP has been successful in competitive grants and discretionary funding sources and will continue to pursue new grant opportunities.
- 10-year funding plan shows commitment to the project necessary to execute supplier and consultant contracts and compete for new funding.
- Staff anticipate the strength of this project will continue to attract competitive discretionary funding sources and local opportunities.



Staff recommendation

Staff recommends that the SFMTA Board authorize the Director of Transportation to execute Contract No. SFMTA-2024-20-FTA with WSP/PGH Wong Joint Venture for consulting services supporting the Train Control Upgrade Project for an initial five-year term, with five options to extend the term for an additional year, for a total of ten years in an amount not to exceed \$36,000,000.

Questions?





SFMTA

Appendix Slides





Current system limitations

The Automatic Train Control System (ATCS) is almost 30 years old with 1980s technology and 1990s components.

2019 Muni Reliability Working Group recommended **replacing the ATCS as the top priority.**

**Aging train control
infrastructure**

+

**Outdated train control
technology**

Computer failures

Communication failures

Lack of parts and expertise

No on-street train control



Muni Metro structural design

5 lines operate mostly in 1 tunnel. A high-performing system is required.

Muni Metro is the 3rd busiest light rail in the U.S. and the last to use only 1 main tunnel for majority of service.





Characteristics of a modern CBTC system



Tracks the locations of all trains at all times



Prevents collisions and enforces safe spacing between trains



Maintains consistent spacing between trains



Controls the trains' braking and acceleration



Sets the train's routing



Prevents delays due to train congestion, traffic signals, or junction delays



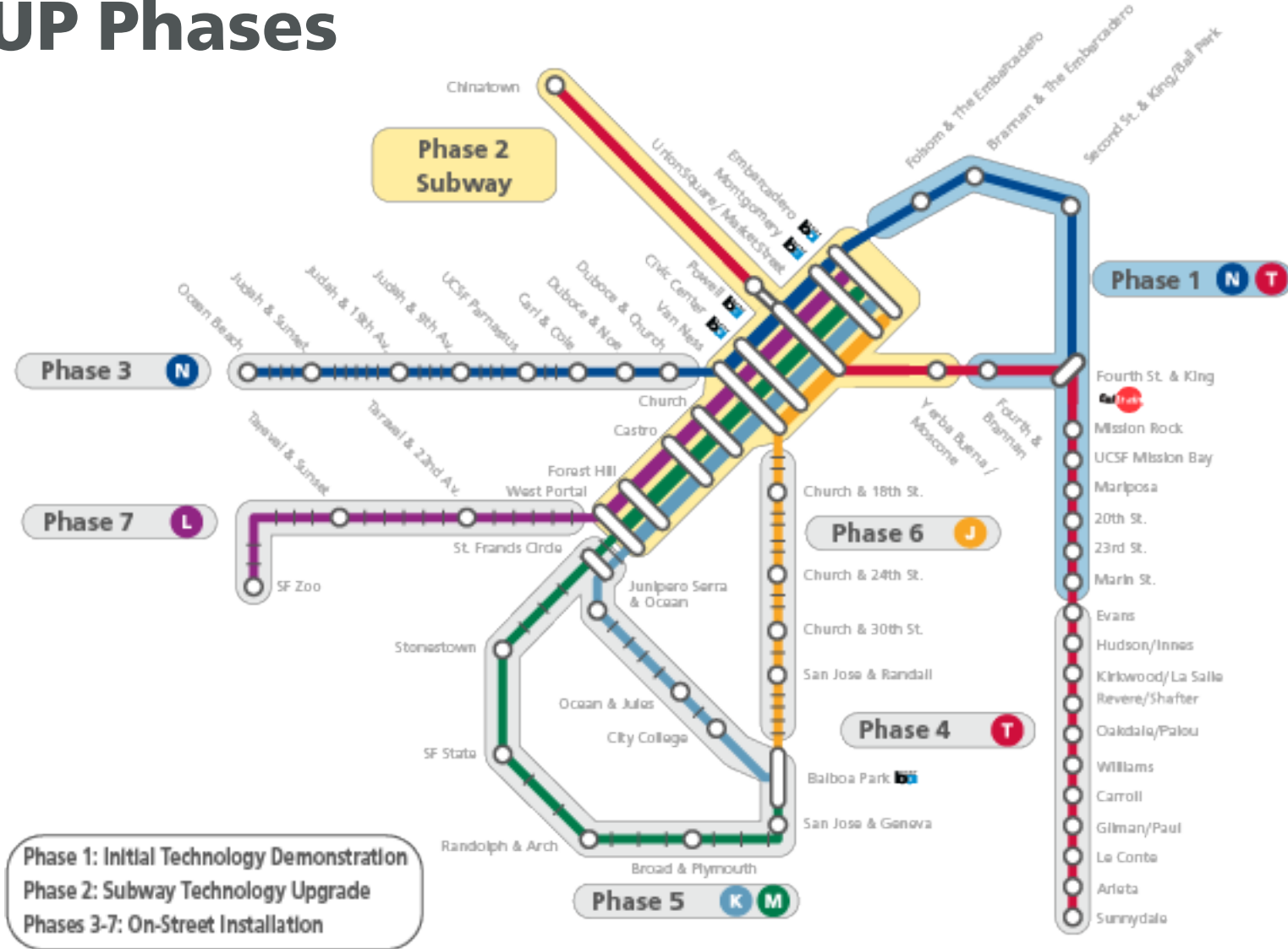
Ensures reliable train frequency and service



Allows greater flexibility of service plans and service during disruptions



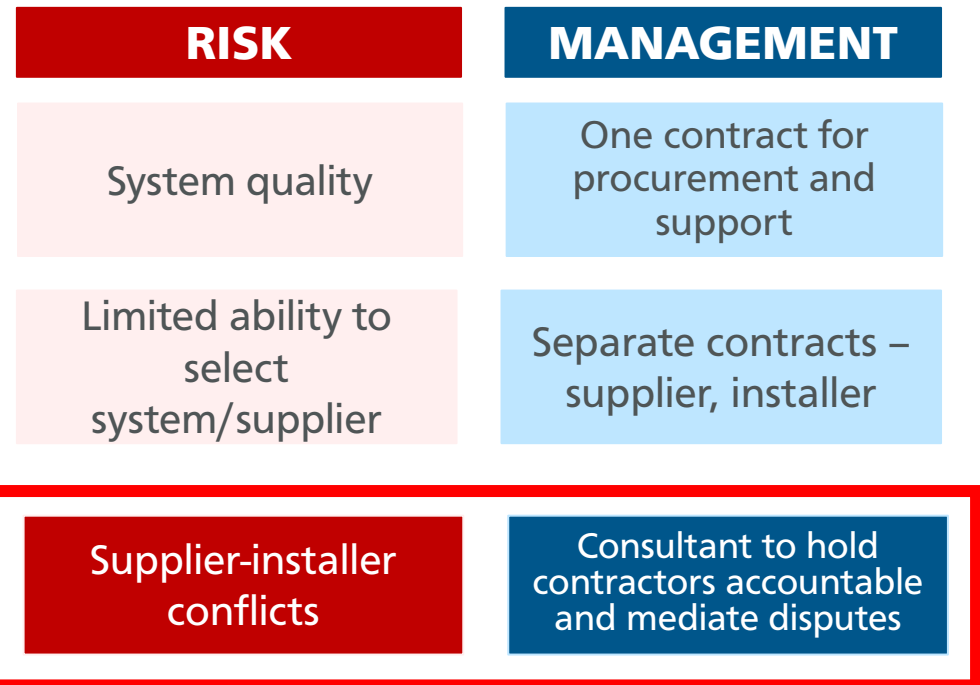
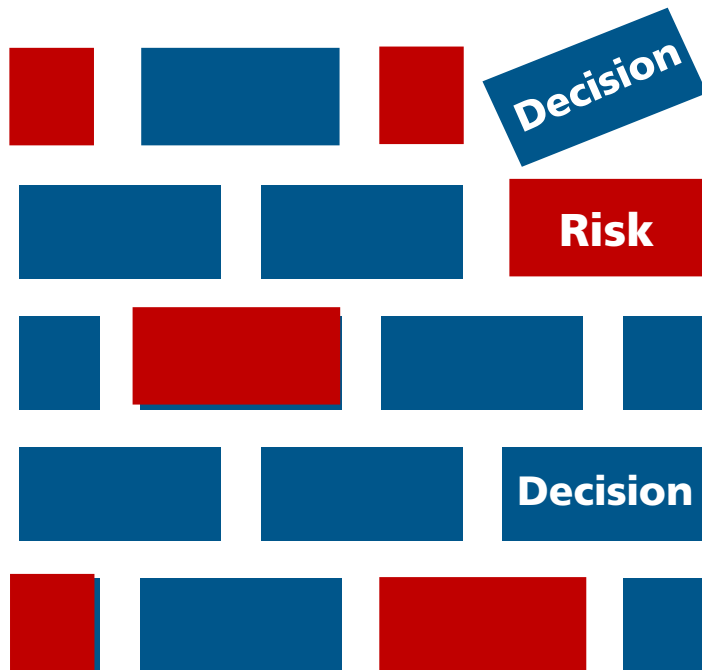
TCUP Phases



Risk Management in Contract Strategy

TCUP centers proactive risk management early and often to minimize challenges. Decision → Analysis → Risk → Analysis → Decision

Partnering with knowledgeable CBTC consultants is a vital part of the TCUP risk management strategy.



Success Strategy: Lessons Learned

The SFMTA has drawn from multiple sources of lessons learned to set the Train Control Upgrade Project up for success.



Peer agencies in North America and Europe



Major SFMTA capital projects like Central Subway and Van Ness Bus Rapid Transit



Past SFMTA technology projects



Current Automatic Train Control System (ATCS)

Harnessing Peer Expertise

U.S.A

MBTA Green Line
BART
New York City Subway



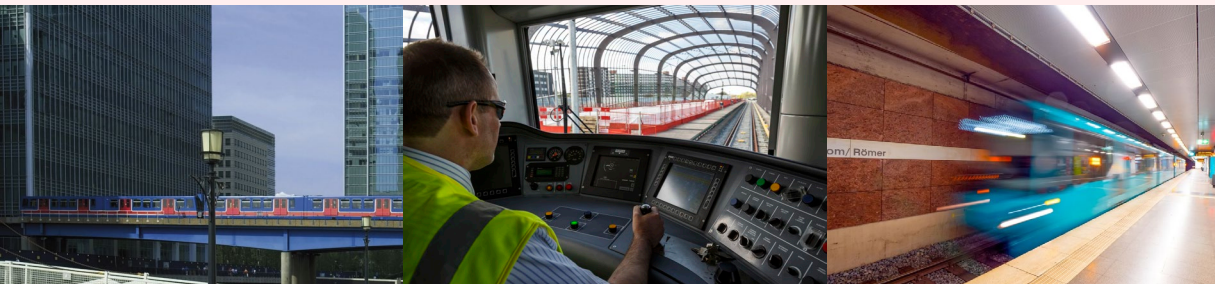
CANADA

Vancouver SkyTrain
Edmonton
Toronto (Eglinton LRT)



EUROPE

London (LU and DLR)
Amsterdam
Frankfurt VGM





Allocated Funds To Date

Funding Source	Funds
FY18 Operating Savings	\$2,095,000
2021 Revenue Bond	\$18,137,549
Prop B (General Fund)	\$340,000
TSF Developer Fee	\$10,000
AB 664 (Bridge Tolls)	\$1,312,500
Total	\$21,895,049

- Local
- Regional
- State
- Federal



Future Sources

2021 Revenue Bond
Prop B (General Fund)
TSF Developer Fee
Prop L
GO Bond
Congested Corridors Grant
TIRCP Grant
SB 1 (State of Good Repair)
FTA (Transit Capital Priorities)

- Local
- Regional
- State
- Federal

