



# AGENDA

## Citizens Advisory Committee Meeting Notice

**Date:** Wednesday, February 26, 2020; 6:00 p.m.

**Location:** Transportation Authority Hearing Room, 1455 Market Street, 22nd Floor

**Members:** John Larson (Chair), David Klein (Vice Chair), Ranyee Chiang, Robert Gower, Jerry Levine, Stephanie Liu, Kevin Ortiz, Peter Tannen, Danielle Thoe, Sophia Tupuola and Rachel Zack

		Page
6:00	1. Call to Order	
6:05	2. Chair’s Report - <b>INFORMATION</b>	
6:10	<b><u>Consent Agenda</u></b>	
	3. Approve the Minutes of the January 22, 2020 Meeting - <b>ACTION*</b>	3
	4. Information on Findings of the Clean Miles Standard - <b>INFORMATION*</b>	13
	5. State and Federal Legislation Update - <b>INFORMATION*</b>	21
	6. San Francisco Muni Reliability Working Group Update - <b>INFORMATION*</b>	27
	7. Progress Report for Van Ness Avenue Bus Rapid Transit Project - <b>INFORMATION*</b>	49
	8. Citizens Advisory Committee Appointment - <b>INFORMATION</b>	
	The Board will consider recommending appointment of one member to the Citizens Advisory Committee (CAC) at its March 10, 2020 meeting. The vacancy is the result of the term expiration of John Larson (District 7 resident), who is seeking reappointment. Neither staff nor CAC members make recommendations regarding CAC appointments. CAC applications can be submitted through the Transportation Authority’s website at <a href="http://www.sfcta.org/cac">www.sfcta.org/cac</a> .	
	<b><u>End of Consent Agenda</u></b>	
6:15	9. Update on the San Francisco Municipal Transportation Agency’s Siemens Light-Rail Vehicle Procurement - <b>INFORMATION*</b>	55
	10. Independent Management and Oversight Report on the San Francisco Municipal Transportation Agency’s Siemens Light-Rail Vehicle Procurement - <b>INFORMATION*</b>	75



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|------|-----|---|------------|
|      | 11. | Adopt a Motion of Support for the Allocation of \$60,732,027 in Prop K Sales Tax Funds, with Conditions, for the Light-Rail Vehicle Procurement - <b>ACTION*</b>  | <b>117</b> |
| 7:00 | 12. | Adopt a Motion of Support for the Allocation of \$1,000,000, with Conditions, for the Mission Street Excelsior Safety Project - <b>ACTION*</b>  | <b>163</b> |
| 7:10 | 13. | Adopt a Motion of Support for the Adoption of a Support Position for the Seamless Transit Principles - <b>ACTION*</b>   | <b>183</b> |
| 7:20 | 14. | Adopt a Motion of Support for the Approval of San Francisco's Draft Plan Bay Area 2050 Fiscally Constrained Project List - <b>ACTION*</b>   | <b>191</b> |
| 7:40 | 15. | Adopt a Motion of Support for the Amendment of the Adopted Fiscal Year 2019/20 Budget to Increase Revenues by \$2.1 Million, Decrease Expenditures by \$71.9 Million, and Decrease Other Financing Sources by \$67.0 Million for a Total Net Increase in Fund Balance of \$7.0 Million - <b>ACTION*</b> | <b>207</b> |

**Other Items**

- 7:55 16. Introduction of New Business - **INFORMATION**
- During this segment of the meeting, CAC members may make comments on items not specifically listed above, or introduce or request items for future consideration.
17. Public Comment
- 8:00 18. Adjournment

\*Additional Materials

**Next Meeting: March 25, 2020**

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# DRAFT MINUTES

## **Citizens Advisory Committee**

Wednesday, January 22, 2020

### **1. Committee Meeting Call to Order**

Chair Larson called the meeting to order at 6:00 p.m.

CAC members present: Robert Gower, John Larson, Jerry Levine, Stephanie Liu, Kevin Ortiz, Danielle Thoe and Rachel Zack (7)

CAC Members Absent: Sophia Tupuola (entered during Item 2), Peter Tannen (entered during Item 9), Ranyee Chiang (entered during Item 10) and David Klein (4)

Transportation Authority staff members present were Kaley Lyons, Amber Crabbe, Eric Cordoba, Mike Tan, Maria Lombardo and Alberto Quintanilla.

### **2. Chair's Report - INFORMATION**

Chair Larson welcomed new CAC members Stephanie Liu and Kevin Ortiz and invited them to make introductory remarks. He announced two upcoming ConnectSF public workshops; Saturday, February 8, 2-4pm, Park Branch Library, 1833 Page Street and Thursday, February 13, 6-8 pm, Mission Cultural Center, 2868 Mission Street. Chair Larson said input from the workshops would help ConnectSF identify project and policy concepts to be included in studies looking at ways to improve city streets, freeways and transit networks. He added that ConnectSF staff was also available to give presentations to community groups.

There was no public comment.

### **3. Election of Chair and Vice Chair for 2020 - ACTION**

Chair Larson announced that at the November 20, 2019 CAC meeting the positions of CAC Chair and Vice Chair had been opened for nominations for the 2020 term. He said that for the Chair seat, John Larson was nominated to be elected.

There was no public comment.

The motion to elect John Larson as Chair was approved by the following vote.

Ayes: CAC Members Gower, Levine, Liu, Ortiz, Thoe, Tupuola and Zack (7)

Abstention: CAC Member Larson (1)

Absent: CAC Member Chiang, Klein and Tannen (3)

Chair Larson said that for the Vice Chair seat, David Klein was nominated to be elected at the November 20, 2019 CAC meeting.

There was no public comment.

The motion to elect David Klein as Vice Chair was approved by the following vote.

Ayes: CAC Members Gower, Larson, Levine, Liu, Ortiz, Thoe, Tupuola and Zack



(8)

Absent: CAC Member Chiang, Klein and Tannen (3)

**Consent Agenda**

- 4. Approve the Minutes of the November 20, 2019 Meeting - ACTION**
- 5. Adopt a Motion of Support for Approval of the Fiscal Year 2020/21 Transportation Fund for Clean Air Program Local Expenditure Criteria - ACTION**
- 6. Citizens Advisory Committee Appointment - INFORMATION**
- 7. Internal Accounting Report, Investment Report, and Debt Expenditure Report for the Six Months Ending December 31, 2019 - INFORMATION**
- 8. Audit Report for the Fiscal Year Ended June 30, 2019 - INFORMATION**

There was no public comment on the Consent Agenda.

Robert Gower moved to approve the Consent Agenda, seconded by Jerry Levine.

The Consent Agenda was approved by the following vote:

Ayes: CAC Members Gower, Larson, Levine, Liu, Ortiz, Thoe, Tupuola and Zack (8)

Absent: CAC Member Chiang, Klein and Tannen (3)

**End of Consent Agenda**

- 9. Adopt a Motion of Support for the Allocation of \$5,832,072 in Prop K Sales Tax Funds for Seven Requests, with Conditions - ACTION**

Kaley Lyons, Transportation Planner, presented the item per the staff memorandum.

Regarding the Islais Creek Bridge Catenary Reconstruction project, Jerry Levine asked what the startup date was for the current phase of the project.

Amy Lam, Project Manager at the San Francisco Municipal Transportation Agency (SFMTA), said the project team was still working on selecting a startup date. She said the project was currently at 65% design, with bids expected to go out around the middle of 2020 and start of construction in 2021.

Regarding the Islais Creek Bridge Catenary Reconstruction project, Danielle Thoe asked if pedestrians and bicyclists would be affected by the 2-3 month shut down of the bridge.

Ms. Lam said the project team still had around a year to develop alternate transit routes for the project, which required additional details about the construction work. She added that SFMTA and the Department of Public Works (DPW) would outreach to the public once the alternate routes were determined.

Danielle Thoe recommended keeping bicycle and pedestrian paths accessible as much as possible during the construction phase of the project.

Regarding the Islais Creek Bridge Catenary Reconstruction project, Sophia Tupuola said the bridge was a major artery into Bayview Hunter's Point and one of few access points to the downtown area. She asked that the project team be very mindful of this when developing plans to reroute public transit riders.





Regarding the Islais Creek Bridge Catenary Reconstruction project, Kevin Ortiz asked what period of time the bridge would be shut down. He suggested that the project team be strategic when selecting a least intrusive time of the year to shut down the bridge. He also recommended that there be an equity focus that protects residents in the surrounding area.

Ms. Lam said SFMTA would host outreach events that would allow residents to ask questions and provide feedback. She also noted that the contractor chosen for the project would need to follow the SFMTA's timeframe, which typically would take into account a desire to overlap with big events, etc.

Regarding the Schools Engineering Program Fiscal Year (FY) 2020, Robert Gower asked how the 35 schools were selected, if the schools were a blend of public and private schools and if cost sharing was utilized for private schools that participated in the program or otherwise.

Damon Curtis, Traffic Calming Project Manager at the SFMTA, said the program covered all public and private schools and did not have a cost sharing component. He said the 35 schools were selected via requests by school faculty, parents or students. He said the requests were made through 311, emails and or phone calls.

Sophia Tupuola asked how schools that did not make formal requests get on the program list, specifically schools located in communities of concern (COCs).

Mr. Curtis said the program had a dedicated engineer who focused solely on school area safety and visited each San Francisco school. He said the 35 schools that selected to be part of the program had the greatest safety need. He added that the population of schools and collision data around schools were also used to prioritize which schools were in most need.

Regarding the Transit Signal Priority project, Peter Tannen asked if there was a timeline to complete installation of Transit Signal Priority equipment on all vehicles and applicable intersections.

Robert Lin, SFMTA staff, said signals were being installed at a rate of 100 signals per year and could potentially complete the Transit Signal Priority implementation in five years if current funding levels remained the same.

Regarding the Traffic Signal Visibility Upgrade projects, Danielle Thoe asked if the program related to the Traffic Signs Upgrades FY 2020 project and if the traffic signs upgrades would also look at adding better striping for high visibility crosswalks along side of upgrading the traffic signs.

Geraldine De Leon, Project Manager at the SFMTA, said the goal of the traffic signs project was to replace outdated signs and focused on locations that had signs installed before 2005.

Danielle Thoe asked if it made sense to also replace striping along crosswalks when replacing traffic signs.

Ms. De Leon said the replacement of striping would require a different crew.

Kevin Ortiz requested a map of the 35 schools selected as part of the Schools Engineering Program FY 2020.

Chair Larson requested an update on the Islais Creek Bridge Catenary Reconstruction project before the start of construction.



There was no public comment.

Peter Tannen moved to approve the item, seconded by Danielle Thoe.

The item was approved by the following vote:

Ayes: CAC Members Gower, Larson, Levine, Liu, Ortiz, Tannen, Thoe, Tupuola and Zack (9)

Absent: CAC Members Chiang and Klein (2)

**10. Adopt a Motion of Support for Approval of the 2020 State and Federal Legislative Program - ACTION**

Amber Crabbe, Public Policy Manager, presented the item per the staff memorandum.

Rachel Zack suggested that the Transportation Authority prioritize climate goals above emerging mobility modes. She asked if the CAC would be able to see the plans for a no-fee Lombard Street Reservation and Pricing Program and noted that the previous legislation would have paid for itself by collecting fees for reservations.

Ms. Crabbe said there currently was not an estimate for the cost of a no-fee Lombard Street Reservation and Pricing Program, but that the CAC would be updated as more information became available. With respect to the climate goals, Ms. Crabbe said Governor Newsom issued a climate action rule in October 2019, which mandated considering climate impacts in the distribution of transportation funds. She said staff anticipated there would be a conversation at the state level about what that would look like with respect to restructuring funding formulas or competitive state grant programs.

Regarding Senate Bill (SB) 50 (Wiener), Rachel Zack asked what the transit shortfalls would be related to the proposed up-zoning.

Ms. Crabbe said the most recent estimates of the city's outstanding transportation funding needs through 2045 was \$22 billion. She said the Transportation Authority Board is seeking an amendment to SB 50 to link the associated growth with funding for transportation planning and infrastructure.

Regarding the Lombard Street Reservation and Pricing Program, Robert Gower asked at what point the cost of a fee-less reservation system outweighs the benefits. He said time, resources and funds were being allocated towards a project that might have a limited impact on congestion, while benefiting a more affluent neighborhood. He added that those resources could possibly be better used in COCs.

Ms. Crabbe said staff was currently working on how to address the issues highlighted by Governor Newsom and that the CAC would receive an update once there is more information on a proposed path forward for a no-fee program.

Robert Gower requested that any future updates identify who the proponent(s) are for the reservation system.

Jerry Levine asked what efforts were underway to work with larger transit agencies to jointly advocate for federal legislation that supports transit.

Ms. Crabbe said the Association of Public Transit Agencies (APTA) had a strong a coalition of transit agencies across the country and were developing platforms and working with members of the House and Senate transportation committees.



Chair Larson suggested a Mello-Roos tax as a funding mechanism for Lombard residents.

Ms. Crabbe acknowledged the suggestion and said she would pass the idea to staff working on the project.

Danielle Thoe seconded Chair Larson's and Robert Gower's comments. She asked if there were any concerns about the government making federal funding available on time.

Ms. Crabbe said the Federal Transit Administration had been slowly obligating Capital Investment Grant funds to local transit agencies. She noted that there was an APTA working group that had collected data showing the cost of the delays to local transit agencies.

In regard to SB 50, Danielle Thoe asked what the critical need was to tie transit funding to the increase in housing. She said she worked as an affordable housing developer and from her experience, housing was not built until an area had accessible public transit. She added that she did not want to see policy bills tied to funding for something else.

Ms. Crabbe said the bill had been amended and staff were working with the San Francisco Planning Department to reevaluate what it would mean for San Francisco. She said she would be happy to follow up with Ms. Thoe. She noted that housing and transit were being increasingly linked at the regional level, and that transportation needs could also be addressed as part of a package of bills, rather than including transportation funding in SB 50.

Danielle Thoe asked if the packaged bills would be similar to SB 278 (Beall).

Ms. Crabbe said staff was still thinking through what the amendments could look like.

Danielle Thoe asked if transit operators who travel within the city had taken a position on SB 50.

Ms. Crabbe said she was not aware, but would follow up.

Stephanie Liu requested a presentation on how the various public agencies work together with respect to funding and governance.

Chair Larson seconded Stephanie Liu's request.

During public comment Edward Mason asked who the principal parties were for Seamless Bay Area and asked if the Transportation Authority was going to take a strong stance requesting that the California Public Utilities Commission (CPUC) release all Transportation Network Company data.

Chair Larson asked if the Seamless Bay Area website address could be sent to the CAC.

Ms. Crabbe said that the CAC would receive an update on Seamless Bay Area at the February CAC meeting.

Jerry Levine moved to approve the item, seconded by Stephanie Liu.

The item was approved by the following vote:

Ayes: CAC Members Chiang, Gower, Larson, Levine, Liu, Ortiz, Tannen, Thoe, Tupuola and Zack (10)



Absent: CAC Member Klein (1)

**11. Adopt a Motion of Support Authorizing the Executive Director to Execute Eight Project Delivery Agreements and Any Amendments Thereto with the California Department of Transportation for Receipt of State and Federal Funds for the Yerba Buena Island Westside Bridges Seismic Retrofit Project - ACTION**

Eric Cordoba, Deputy Director for Capital Projects, presented the item per the staff memorandum.

Chair Larson asked if the bridges would be shut down at the start of construction.

Mr. Cordoba said the roadway on the west side of the island would be shut down and detour vehicles on and off the island through Macalla Road or Southgate Road.

Peter Tannen asked for additional information on the Forrest Road detour project.

Mr. Cordoba said the Forrest Road detour was built as a temporary detour for the Yerba Buena Island Westside Bridges ramps project. He added it was a major detour access point for Yerba Buena Island.

There was no public comment.

Kevin Ortiz moved to approve the item, seconded by Robert Gower.

The item was approved by the following vote:

Ayes: CAC Members Chiang, Gower, Larson, Levine, Liu, Ortiz, Tannen, Thoe, Tupuola and Zack (10)

Absent: CAC Member Klein (1)

**12. Adopt a Motion of Support Authorizing the Executive Director to Amend No. 5 to the Memorandum of Agreement with the Treasure Island Development Authority for Yerba Buena Island Vista Point Operation Services to Increase the Amount by \$400,000, to a Total Amount Not to Exceed \$1,995,000, and Extend the Agreement Through June 30, 2022 for Operations and Maintenance Services for the New Vista Point at Pier E2 - ACTION**

Eric Cordoba, Deputy Director for Capital Projects, presented the item per the staff memorandum.

Peter Tannen said he had been out to Vista Point and looked forward to the Pier E2 opening.

Mr. Cordoba said there was still a lot of construction on the roadway, but work was being done to inform the public of what sites were currently open.

Jerry Levine asked if the Transportation Authority could organize a CAC visit of Vista Point.

Mr. Cordoba said staff could coordinate a site visit for the CAC, potentially in the spring.

Chair Larson asked if there was an update on plans to extend the Bay Bridge bicycle path from Oakland to San Francisco.

Mr. Cordoba said the Bay Area Toll Authority (BATA) was the lead agency on the project and had Regional Measure 3 (RM3) funding to continue the work. He added that the Transportation Authority was working with BATA to add a bicycle path along



the roadway segment on the west span side of Yerba Buena Island that would go across the Bay Bridge. Mr. Cordoba said he could provide a detailed update at a future meeting.

Robert Gower asked if the historic torpedo building location was under the new eastern span of the Bay Bridge.

Mr. Cordoba replied in the affirmative.

There was no public comment.

Peter Tannen moved to approve the item, seconded by Sophia Tupuola.

The item was approved by the following vote:

Ayes: CAC Members Chiang, Gower, Larson, Levine, Liu, Ortiz, Tannen, Thoe, Tupuola and Zack (10)

Absent: CAC Member Klein (1)

**13. Progress Report for Van Ness Avenue Bus Rapid Transit Project - INFORMATION**

Eric Cordoba, Deputy Director for Capital Projects, presented the item per the staff memorandum.

Robert Gower asked if the disputes with the project contractor had been resolved.

Mr. Cordoba said that there had been agreements made on some of the major contractor's claims regarding underground work. He added that project staff was also having a more in-depth investigation with the construction management team.

Peter Gabancho, Project Manager at the SFMTA, said project staff had worked with the contractor to not get hung up over disputes on cost. He said the city was incorporating unilateral change orders with the contractor to focus on the construction work, allowing more time to address the financial issues without holding up the project.

Robert Gower said it sounded like the city and the contractor were developing good faith to ensure that the construction kept moving forward.

Mr. Cordoba replied in the affirmative and said he was in favor of the city's use of unilateral change orders with the contractor.

Rachel Zack said she gets off the bus on McAllister Street and asked what the thought was behind how the drop off zone was configured, noting the bus doesn't pull into the drop off area.

Mr. Gabancho said the bus stop on McAllister Street was a drop off zone built for the opera house and was primarily used by people visiting the nearby art center.

Peter Tannen asked about the unanticipated sewer and water pipe conditions.

Mr. Gabancho said Van Ness Avenue has had active occupation for over 150 years and had a lot of infrastructure that was unrecorded and unmapped. He said unanticipated gas lines required identifying whether or not the gas line was active and which utility company it belonged to - all of which take time.

Peter Tannen asked if the subcontractor had any relation to the famous Michael O'Shaughnessy,



Mr. Gabancho said there was no relation as far as he knew.

Mr. Cordoba said Yerba Buena Island was another example of a site with old infrastructure and inaccurate map drawings. He added that unanticipated gas and water lines required following safety protocols and due diligence.

Chair Larson recalled a previous Van Ness Avenue discussion about the city not wanting to install replica street lights in the historic zone of Van Ness Avenue because they were not real and installing modern street lights in the heritage zone. He asked what was decided for those two zones of the corridor.

Mr. Gabancho said that modern street lights would be installed in the historic district and the replica historic lights were going to be installed into the rest of the corridor.

There was no public comment.

**14. Update on Caltrans U.S. 101 Deck Replacement at Alemany Circle Project - INFORMATION**

Al Lee, Project Manager at Caltrans, presented the item.

Rachel Zack asked if the project would prioritize public transit or high occupancy vehicles (HOV) lanes during the deck replacement.

La-Tanga Hopes, Public Information Officer at Caltrans, said Caltrans goal was to go full multimodal and emphasize alternative transportation options. She said Caltrans was asking the public to avoid using Alemany Boulevard and consider teleconferencing or working remotely. Ms. Hopes added that Caltrans was developing a project webpage that would be a transportation hub for all possible modes of travel during the construction period.

Mr. Lee said Caltrans was working with the SFMTA to provide a bus only lane on Bayshore Boulevard.

Rachel Zack asked if Caltrans had plans to prioritize public transit during construction.

Mr. Lee said it was a regional project which would require coordination and outreach among the various public transit agencies. He said there was on-going discussion with SamTrans about potentially having buses use shoulder lanes on the freeway.

Stephanie Liu said Google had a five-day reorganization and asked their employees to work remotely, which noticeably reduced traffic on U.S. 101. She asked if Caltrans was working with Apple and Google maps, noting that the public would most likely rely on those apps as opposed to visiting the Caltrans website.

Ms. Hopes said Caltrans would ask major employers to suggest that their San Francisco based employees work out of alternate satellite offices to lessen the number of vehicles on U.S. 101.

Stephanie Liu said the potential increase of new Caltrain and BART riders, due to the deck replacement, might be a good opportunity for those public transit agencies to convince the public to rely more on public transit.

Ms. Hopes agreed.

Stephanie Liu asked if Caltrans had considered using eco-friendly concrete and building materials for the project.

Mr. Lee said all Caltrans projects had strict protocols for materials, including concrete.



Stephanie Liu said she would like to know how the CAC could assist in getting the word out promoting any upcoming outreach events.

Ms. Hopes said Caltrans had three upcoming public meetings scheduled (shown in the slide deck) and encouraged the CAC to help get the word out.

Robert Gower asked why westbound Alemany had to be converted into a two-way street and what resources would be used to help cyclists.

Mr. Lee said westbound Alemany was being converted into a two-way street because the northbound off-ramp would no longer be available and instead become part of the mainline detour. He said parking control officers would be active in the area to facilitate Muni and general traffic movement. Mr. Lee added that the reconfigured two-way street would have bike lanes on both sides.

Robert Gower asked if Caltrans was working with BART to ensure there will be traffic flow and control at the Balboa Park and Glen Park stations. He noted that Glen Park was a heavily congested area with tech shuttles.

Mr. Lee said Caltrans was working with BART to establish a memorandum of understanding to add additional BART station officers during the project. He said he would pass the question along to BART staff regarding traffic flow at the Balboa Park and Glen Park stations.

Robert Gower requested that Caltrans attend neighborhood association meetings in the area before the start of the project.

Ms. Hopes said Caltrans' goal was to reach as many neighborhoods as possible and provided her contact information with the CAC.

Sophia Tupuola asked what was being done to provide preferential hiring for local residents who would be directly affected by the project, especially in communities of concern.

Mr. Lee said it was a \$21 million capital project for Caltrans and had a 13% disadvantaged business enterprise (DBE) goal. He said he anticipated that local sub-contractors would be hired, and that Caltrans had hired Civic Edge to assist with outreach.

Ranyee Chiang said that a silver lining of the project may be that people will permanently switch to other modes of transportation if they are encouraged to try. She asked what quality assurance and quality control (QA/QC) measures Caltrans was taking to ensure safety during and after the 18-day construction period.

Mr. Lee said the project had the highest attention at Caltrans and would have a daily reporting system from the contractor. He added that the Caltrans project team was familiar with high impact projects and was the same team that worked on projects like Doyle Drive.

Peter Tannen suggested updating the presentation to clearly show that the existing eastbound portion of Alemany Boulevard would be closed and rerouted during construction. He also suggested providing greater detail around the local shortcuts' drivers might take during the construction periods.

Mr. Lee acknowledged Mr. Tannen's suggestions and said Caltrans had met with Supervisor Walton's office on three occasions discussing the need to close the eastbound on-ramp at 3<sup>rd</sup> Street, in order to prevent drivers from using local roads as



a shortcut.

Danielle Thoe noted that the Caltrans U.S. 101 deck replacement project webpage was under multiple news articles in in Google search results rather than appearing on top. She suggested using paid search results to make it more accessible to the public. She also noted that information on the public outreach meetings was not on the project website.

Ms. Hopes said Caltrans was planning to launch a new webpage on Friday, January 31. She added that Caltrans would use all forms of media to keep the public updated throughout the project. She added that Caltrans' intent is to inform and alert the public, but not scare them away from visiting businesses in the area.

There was no public comment.

#### **15. Introduction of New Business - INFORMATION**

Jerry Levine requested a presentation from new SFMTA Executive Director Jeffrey Tumlin and said he had concerns and questions about Mr. Tumlin's vision for the SFMTA moving forward.

Chair Larson said he supported Mr. Levine's request.

Sophia said she recently rode a Lyft rideshare bike and enjoyed the experience. She asked if anything was being done to reach out to District 10 residents such as holding an educational workshop to inform new riders where to locate bike racks and how to use the bike share system.

Kevin Ortiz requested a map of geofenced Transportation Network Company (TNC) areas and the process required to geofence different sections of the city.

Chair Larson asked if the CAC could initially be provided a map of areas that the city had or planned to geofence.

Rachel Zack said she would be happy to discuss geofencing at a future CAC meeting.

Peter Tannen seconded Mr. Levine's request for a presentation from Mr. Tumlin.

Robert Gower requested a future update on the Better Market Street project and the closure of Market Street to private vehicles.

There was no public comment.

#### **16. Public Comment**

Edward Mason provided an update on idling commuter shuttle buses, buses with no license plates or no permits and additional violations.

Chair Larson asked if his monthly reports to the CAC were being forwarded to Commissioner Mandelman or the SFMTA.

Mr. Mason said he was regularly sending reports to the SFMTA, but said his reports had been rejected by the SFMTA, but did note that the city's taxi inspectors were out monitoring the streets he highlighted in his reports.

Jackie Sachs requested a Central Subway and Other 9 to 5 project update.

#### **17. Adjournment**

The meeting was adjourned at 8:21 p.m.





# Memorandum

## AGENDA ITEM 4

**DATE:** February 20, 2020  
**TO:** Transportation Authority Board  
**FROM:** Joe Castiglione - Deputy Director for Technology, Data & Analysis  
**SUBJECT:** 02/25/20 Board Meeting: Information on Findings of the Clean Miles Standard

<p><b>RECOMMENDATION</b>    <input checked="" type="checkbox"/> Information    <input type="checkbox"/> Action</p> <p>None. This is an information item.</p> <p><b>SUMMARY</b></p> <p>This item presents findings from the California Air Resources Board’s (CARB’s) Clean Miles Standard 2018 Base Year Emissions Inventory Report, which estimates CO2 emissions per-passenger-mile for TNCs pursuant to Senate Bill (SB) 1014. The Emissions Inventory found that TNCs emit 50% more CO2 per-passenger-mile than the statewide passenger vehicle fleet in California, indicating that TNCs are challenging our ability to meet climate goals. The Transportation Authority will continue to advise CARB as it sets emissions reductions targets for the TNC industry.</p>	<p><input type="checkbox"/> Fund Allocation</p> <p><input type="checkbox"/> Fund Programming</p> <p><input checked="" type="checkbox"/> Policy/Legislation</p> <p><input type="checkbox"/> Plan/Study</p> <p><input type="checkbox"/> Capital Project Oversight/Delivery</p> <p><input type="checkbox"/> Budget/Finance</p> <p><input type="checkbox"/> Contract/Agreement</p> <p><input type="checkbox"/> Other: _____</p>
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## BACKGROUND

In 2018, Senate Bill (SB) 1014 (Skinner) directed CARB to develop an inventory of CO2 emissions per-passenger-mile of transportation network companies (TNCs) and adopt annual emissions reduction goals and targets for TNCs. SB 1014 directs the California Public Utilities Commission (CPUC) to implement the annual goals and targets. In September 2019, CARB held a workshop where they shared and sought feedback on their draft emissions inventory methodology and findings. Staff from the Transportation Authority and San Francisco Municipal Transportation Agency (SFMTA) attended the workshop and worked with CARB over the following months to provide guidance and feedback.

In December 2019, CARB released the Clean Miles Standard 2018 Base-year Emissions Inventory. This is the first step in a process that will guide the regulation of emissions in the rapidly evolving TNC sector. It is also our first window into the emissions of TNCs, based on



comprehensive data directly from TNC companies. In 2021, CARB will adopt annual goals and targets. In 2023, CPUC will begin implementing annual goals and targets.

## **DISCUSSION**

In September 2019, CARB held a workshop where they shared and sought feedback on their draft emissions inventory methodology and findings. Based on the draft findings, staff from both the Transportation Authority and SFMTA provided detailed feedback to CARB on evaluating baseline emissions, setting goals and targets, and monitoring performance. These comments largely supported CARB's draft methodology and findings, while noting that regulating emissions per-passenger-mile may not be sufficient to reduce total emissions, due to the sector's rapid growth and competition with lower emitting modes such as transit. The full set of comments we and SFMTA provided may be found in Attachment A. This engagement is critical to ensure that CARB's methodology is sound, and that goals and targets are set appropriately to meet California's and San Francisco's climate goals.

### **Findings.**

The 2018 Base Year Emissions Inventory produced key findings, including:

- TNCs emit 50% more CO<sup>2</sup>/PMT than the California light-duty vehicle fleet, emitting approximately 301 gCO<sup>2</sup>/PMT, compared to 203 gCO<sup>2</sup>/PMT.<sup>1</sup>
- Although TNC vehicles are cleaner on average, 38.5% of miles driven by TNCs are without a passenger, a finding that is supported by other studies.<sup>2,3</sup>

### **Methodology.**

CARB staff collected TNC travel records,<sup>4</sup> vehicle characteristics,<sup>5</sup> fuel economy and emissions data,<sup>6</sup> and passenger occupancy data from several sources to estimate CO<sup>2</sup> emissions per-passenger-mile.<sup>7</sup> These sources include data provided by TNC companies, through publicly available sources, and collected by CARB.

Some TNC drivers will drive using multiple TNC platforms at once. To account for this, CARB built complete travel records for each vehicle, using VIN and license plate data to match vehicles. Next, they estimated vehicle occupancy for pooled and non-pooled service from

<sup>1</sup> Transportation Authority previously reported 75% from CARB's draft analysis, which was recently adjusted to 50% in their final inventory (CARB Presentation to the Public Workshop for the Clean Miles Standard. September 2019. [https://ww2.arb.ca.gov/sites/default/files/2019-09/Clean\\_Miles\\_Standard\\_Workshop\\_Slides.pdf](https://ww2.arb.ca.gov/sites/default/files/2019-09/Clean_Miles_Standard_Workshop_Slides.pdf)).

<sup>2</sup> Erhardt et. al. Do Transportation Network Companies Decrease or Increase Congestion? Science Advances, Vol. 5 No. 5, May 8, 2019.

<sup>3</sup> Fehr & Peers. Estimated TNC share of VMT in six US metropolitan regions. (2019).

<sup>4</sup> Detailed trip records of TNC activity, provided by TNC companies, describing their activity while waiting for a trip request (period 1), routing to a pickup location (period 2), and driving passengers to their destination (period 3), including detailed time and location data and the vehicle identification number (VIN)

<sup>5</sup> Vehicle characteristics by VIN from the California Department of Motor Vehicles, IHS Markit's VIntelligence

<sup>6</sup> Fuel economy data from the U.S. EPA, emissions data from CARB's Vehicle Emissions Database System and the CARB Data Logger Study

<sup>7</sup> Occupancy data from the CARB Data Logger Study



data collected through the CARB Data Logger study, applying this data to the appropriate trip types. Finally, they estimated emissions for each trip using vehicle-specific fuel economy and a CO<sup>2</sup> emissions conversion factor, accounting for hybrid electric vehicles that can operate with or without a combustion engine.

### **Significance of Clean Miles Standard Base Year Emissions Inventory**

The 2018 Base Year Emissions Inventory findings demonstrate the value of requiring TNC data in developing statewide policy.

Before now, various parties have tried to estimate the emissions impact of TNCs at a large scale (nationally or statewide). This validates the importance of the Transportation Authority's and SFMTA's advocacy to the CPUC's rulemaking on TNC data, urging that TNC reports are made publicly available. Using TNC-provided data, the Emissions Inventory provides valuable evidence of the performance of the TNC sector in the area of air quality. Clearly, TNC data can also support analyses in other public policy areas of importance as well.

### **Next Steps.**

Now that CARB has completed its 2018 Base Year Emissions Inventory, they will begin developing annual emissions goals and targets for TNCs. Staff from the Transportation Authority and SFMTA will continue to engage with CARB to assist with Clean Miles Standard Implementation.

### **FINANCIAL IMPACT**

None. This is an information item.

### **CAC POSITION**

None. This is an information item.

### **SUPPLEMENTAL MATERIALS**

- Attachment 1 - SFCTA and SFMTA Comments to CARB on the Clean Miles Standard Implementation

## Attachment 1

### SFCTA and SFMTA Comments to CARB on the Clean Miles Standard Implementation

The following contains comments delivered by San Francisco County Transportation Authority (SFCTA) and San Francisco Municipal Transportation Agency (SFMTA) staff to California Air Resources Board (CARB) staff concerning CARB's Clean Miles Standard draft base year emissions inventory methodology and results.

#### COMMENTS ON CLEAN MILES STANDARD IMPLEMENTATION

##### CARB Should Establish a Net Impact Metric

SB 1014 calls for CARB to establish a metric which measures the GHG effects of TNCs on a per-unit basis; this is what we would call an efficiency metric. This can be distinguished from a net impact metric, which measures a total effect. It is possible for an efficiency metric to reflect reduced GHG while net GHG remains static or even increases. As an example, a TNC could double its average occupancy rate and thus drastically cut its emissions per PMT. However, if that TNC triples its operations in that same period, total emissions may increase. The same logic can be applied to other components of the Clean Miles Standard analysis, such as the proportion of drivers with zero-emission vehicles; the proportion of VMT completed by zero-emission vehicles; and gram-per-mile GHG emissions rates.

Research has demonstrated that TNCs reduce transit ridership. By shifting people from low or no emissions modes like walking, biking, and transit, TNCs may generate more total GHG while decreasing GHG per passenger mile. A net impact metric is the most appropriate methodology by which CARB could consider the interactions of TNCs with active and transit modes, and the impact of those interactions. This metric would also reflect growth in the volume of TNC trips statewide and other potential factors, so research should be designed to distinguish these contributing effects.

**Recommendation:** As part of its "next steps", following the establishment of the required 2018 TNC baseline emissions profile, we urge CARB to also develop not only net impact targets for TNCs reductions in GHG per passenger mile also for the reduction of total TNC net impacts on GHGs.

##### Active Transportation Assumptions

In the Preliminary 2018 Base Year Emissions Inventory, CARB proposed that grams of CO<sub>2</sub> per passenger mile be calculated with the equation below, assuming active and transit PMT to be zero (0):

$$\frac{(\text{Vehicle Miles Traveled (VMT)} \times \text{Real World Fuel Consumption} \times \text{Conversion Factor})}{((\text{Passenger Miles Traveled (PMT)} \times \text{Occupancy}) + \text{Active PMT} + \text{Transit PMT})}$$

We agree with the assumption of zero active and transit PMT, both now and in any future calculation of this metric. Because of the importance of transit and active transportation trips in reducing GHG emissions it is critical to not misattribute the efficiency of these modes to

TNCs. By assuming active and transit PMT to be zero, the metric will be a true efficiency metric which can be used to compare the efficiency of TNCs to the efficiency of transit, active transportation, or other modes.

We understand that it has been proposed that TNCs are credited for miles taken by walking, biking, transit, or zero-emission modes that precede or follow a TNC trip. For example, if someone takes a TNC to a commuter rail station, and then takes the train, then all miles traveled by train would be included in the denominator of the calculation. This is problematic because:

1. The metric could no longer be used to evaluate the relative efficiency of alternative modes because it would no longer describe the miles taken by a single mode.
2. The metric would misattribute efficiency of other modes to TNCs. Consider a trip from Sacramento to Oakland, during which someone takes a three-mile TNC trip to Amtrak followed by the Capitol Corridor train 80 miles to Oakland. This would result in 3 vehicle miles and 83 passenger miles, but the efficiency is derived entirely from the train segment.
3. The outcomes are not consistent with the spirit of SB 1014 and CARB's mandate. SB 1014 aims to decrease greenhouse gas emissions by requiring TNCs to become more efficient. But allowing them "credit" for miles taken on other modes ignores the complex interactions between these modes, and the net effect of those interactions. Finally, as noted previously, research has established that TNCs reduce total transit ridership, a very worrisome impact, even if some trips connect to transit.

Additionally, we are concerned that active transportation miles generated by TNC owned bikeshare and scooter programs may be incorporated as credits toward their companies' emissions profile. This should not be included, because it does not describe TNC activity or associated emissions. Furthermore, it could allow a TNC company to meet its targets by acquiring an existing bikeshare or scooter share company but making no changes to its TNC operations. Any accounting of bikeshare and scooter share performance should be a separate metric. Additionally, bikeshare and scooter share programs generate non-revenue VMT due to the use of vehicles in maintenance and rebalancing efforts, which would need to be included in any such calculations. Rebalancing means the manual redistribution of devices (i.e. bikes and scooters) to different areas to meet expected demand. As an example, one of the scooter share companies tracked through San Francisco's permit system generated an average of 10,528 VMT per month in the past year of operation. This

demonstrates the need to ensure that the emissions calculations associated with active transportation trips do not frustrate the intent of SB 1014.

**Recommendation:** For the reasons stated above, we support CARB's current proposal to assume miles taken by transit and active transportation be represented as zero in the calculation of grams of greenhouse gas emissions per passenger mile for TNCs.

### **Vehicle Occupancy**

CARB and/or the CPUC should require TNCs to collect and report actual vehicle occupancy and passenger miles traveled (PMT). For pooled rides, occupancy is already collected by TNC companies, but not reported to the CPUC. TNC companies should be required to collect and report to the CPUC occupancy for both pooled and non-pooled rides. Occupancy data can be collected and reported without use of any personally identifiable information and thus raises no personal privacy concerns. This is the best way to reliably collect comprehensive PMT data.

**Recommendation:** Require TNCs to collect and report occupancy data for all trips.

### **Regional Targets**

The SFCTA's TNCs Today and TNCs and Congestion reports showed that TNC activity is highly concentrated within San Francisco. We can also see from the TNCs Today report that there is significant variance in activity by location. It is certain that the concentration of activity and impacts throughout California is similarly variable. For this reason, CARB should consider setting targets, monitoring results and enforcing targets by region and/or place-type. It is critical to understand not only statewide efficiency, but which regions are bearing impacts and which regions are leading in efficiency. We believe a statewide emissions standard with no regional enforcement would obscure these differences and potentially lead to unintended consequences as TNCs adapt their business models to the new regulations.

For example: TNCs might rebalance their operations by pulling out of or reducing operations in less dense markets and further concentrating their operations in more dense markets, which would help them to reach statewide PMT emissions targets. The negative impacts of this scenario are twofold: Less dense communities which are already heavily reliant upon automobiles would lose access to one of their few transportation options, and more dense communities like San Francisco would be affected by the negative impacts of increased TNC activity such as congestion and shifting of transit ridership to vehicle travel. Within the framework of a statewide emissions standard, the only sure way to prevent this would be to set a standard that is achievable in TNCs lowest performing markets - and would

likely be well below the threshold of relevance for their very dense markets like San Francisco and Los Angeles.

We understand CARB's hesitation to advance geographically constrained regulations which the agency or the CPUC may be challenged to enforce. We would point towards the ongoing TNC Access For All rulemaking process - which is considering collecting and disbursing money as well as setting accessibility targets at a county-level - as an example of the sort of geography-based regulation we propose.

Recommendation: We suggest that CARB establish the baseline, and then set and enforce targets at the county level. We recommend further engagement with local and regional transportation agencies to support this approach.

### **Data Validation and Verification**

As evidenced by the recent vehicle emissions scandal, transportation companies have shown a willingness to oppose and circumvent local and statewide policies and regulations in order to maintain or expand their business interests and operations. We strongly encourage CARB to validate and verify the data they receive from TNCs as thoroughly as possible. One method of doing this would be cross-referencing it with aggregate data collected separately by the California Public Utilities Commissions (CPUC) to highlight any potential discrepancies. We also recommend CARB utilize its audit and enforcement powers to ensure compliance with the intent of SB 1014. See links cited below for more information.

Recommendation: We recommend that CARB audit the baseline and other compliance related data against TNC business records maintained for other purposes to ensure that they are authentic and to validate and verify all data associated with SB 1014.

### **Driverless TNCs**

Autonomous vehicle technology is being used daily on California streets and many TNC companies are currently testing this technology. It is estimated that AVs generated two million vehicle miles traveled in California during 2018. We recognize that most of these miles were not generated by TNCs but nonetheless note the likely need to consider the role of AV technology in the Clean Miles Standard program in the future.

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RESOLUTION ADOPTING AN OPPOSE POSITION ON ASSEMBLY BILL (AB) 1848  
(LACKEY) AND AN OPPOSE UNLESS AMENDED POSITION ON AB 1964 (FRAZIER)

WHEREAS, The Transportation Authority approves a set of legislative principles to guide transportation policy advocacy in the sessions of the Federal and State Legislatures; and

WHEREAS, With the assistance of the Transportation Authority's legislative advocate in Sacramento, staff has reviewed pending legislation for the current Legislative Session and analyzed it for consistency with the Transportation Authority's adopted legislative principles and for impacts on transportation funding and program implementation in San Francisco and recommended adopting a new oppose position on AB 1848 (Lackey) and a new oppose unless amended position on AB 1964 (Frazier) as shown in Attachment 1; and

WHEREAS, At its February 11, 2019 meeting, the Board reviewed and discussed AB 1848 (Lackey) and AB 1964 (Frazier); now, therefore, be it

RESOLVED, That the Transportation Authority hereby adopts an oppose position on AB 1848 (Lackey) and an oppose unless amended position on AB 1964 (Frazier); and be it further

RESOLVED, That the Executive Director is directed to communicate this position to all relevant parties.

Attachment:

1. State Legislation - February 2020

**State Legislation - February 2020**

(Updated February 4, 2020)

To view documents associated with the bill, click the bill number link.

February 21 is the last day to submit new bills this session so we expect an uptick in legislative activity over the next several weeks.

Staff is recommending a new oppose position on Assembly Bill (AB) 1848 (Lackey), a new oppose unless amended position on AB 1964 (Frazier), and new watch positions on AB 1350 (Gonzalez), AB 2012 (Chu), and AB 2057 (Chiu) as show in **Table 1**.

**Table 2** provides updates on AB 40 (Ting), Senate Bill (SB) 50 (Wiener), and SB 278 (Beall), on which the Transportation Authority has previously taken positions this session.

**Table 3** shows the status of active bills as of the beginning of 2020 on which the Board has already taken a position.

**Table 1. New Recommended Positions**

Recommended Positions	Bill # Author	Title and Update
Watch	<a href="#">AB 1350</a> <a href="#">Gonzalez</a> D	<p><b>Free youth transit passes: eligibility for state funding.</b></p> <p>This bill would require transit agencies to offer free youth transit passes to persons 18 years of age and under in order to be eligible for state funding under the Mills-Deddeh Transit Development Act, the State Transit Assistance Program, or the Low Carbon Transit Operations Program. The bill would also require a free youth transit pass to count as a full price fare for purposes of calculating the ratio of fare revenues to operating costs, which serves as the basis for these sources' formula distribution to operators.</p> <p>The San Francisco Municipal Transportation Agency (SFMTA) already has a Free Muni for Youth program for low- and moderate- income students, and a \$40 transit pass discount for all youth. We do not have a cost estimate of what it would take to extend the program to all students but are concerned that the bill does not currently identify funding that would offset lost fare revenue.</p>
Oppose	<a href="#">AB 1848</a> <a href="#">Lackey</a> R	<p><b>High-speed rail: Metrolink commuter rail system.</b></p> <p>In 2008, voters approved a \$10 billion general obligation bond to develop and implement a high-speed rail system in the state. This bill would appropriate \$4 billion of remaining high-speed rail bond revenues to the Southern California Regional Rail Authority to fund improvements to the Metrolink commuter rail system. The project's current business plan would have directed most of this funding to a segment connecting San Francisco to the Central Valley segment that is currently under construction.</p> <p>We are recommending an oppose position to maintain the funding for the Northern California project segment, which includes the Peninsula and extension of high-speed rail to the Salesforce Transit Center in downtown San Francisco.</p>
Oppose Unless Amended	<a href="#">AB 1964</a> <a href="#">Frazier</a> D	<p><b>Autonomous vehicles.</b></p> <p>Existing law authorizes the operation of an autonomous vehicle on public roads for testing purposes by a driver who possesses the proper class of license for the type of vehicle being operated if specified requirements are met. Existing law defines an "autonomous vehicle" for this purpose as any vehicle equipped with autonomous technology that has been integrated into the vehicle. This bill would</p>

		<p>expand the definition of the term “autonomous vehicle” to also include a remotely operated vehicle, defined as a specified type of vehicle that is capable of being operated by a driver or operator that is not inside of the vehicle.</p> <p>This bill would effectively authorize the testing of remote-controlled vehicles on public roads, similar to what autonomous vehicles have today. We are seeking amendments requiring that prior to on-road testing there is consultation with local agencies about public safety measures (e.g. how the vehicle should respond to a collision, how it should navigate bike lanes and curb access, how it responds to law enforcement). Amendments should also require reporting to local agencies about any on-road incidents or operational failures during testing. We have reached out to SFMTA staff for input on this bill when they are able to review it.</p>
<p>Watch</p>	<p><a href="#">AB 2012</a> <a href="#">Chu D</a></p>	<p><b>Free senior transit passes: eligibility for state funding.</b></p> <p>Similar to AB 1035 (Gonzalez) above, this bill would require transit agencies to offer free senior transit passes to persons over 65 years of age in order to be eligible for state funding under the Mills-Deddeh Transit Development Act, the State Transit Assistance Program, and the Low Carbon Transit Operations Program. The bill would require those free senior transit passes to count as full price fares for purposes of calculating the ratio of fare revenues to operating costs, which serves as the basis for these sources’ formula distribution to operators.</p> <p>The San Francisco Municipal Transportation Agency (SFMTA) already provides free transit passes for low- and moderate- income seniors, and seniors of all incomes are eligible to receive a \$40 discount on a monthly pass. We do not have a cost estimate of what it would take to extend the free program to all students but are concerned that the bill does not currently identify funding that would offset lost fare revenue.</p>
<p>Watch</p>	<p><a href="#">AB 2057</a> <a href="#">Chiu D</a></p>	<p><b>San Francisco Bay Area: public transportation.</b></p> <p>This is currently a spot bill, which specifies the author's intent to put in place reforms to make the region's transit system easier to use with a more seamless experience for transit riders. Assemblymember Chiu is working with Seamless Bay Area, a nonprofit sponsor of the legislation, as well as with public agencies and other stakeholders on substantive language for the bill which will be introduced at a later date.</p> <p>Based on our conversations with the author and Seamless Bay Area, we expect that this bill will establish a commission to study the region's existing transit system and transportation governance, with an eye toward recommending institutional reforms. This may include establishing a Transportation Network Manager or Planner similar to what is being contemplated as part of SB 278 (Beall), which would coordinate transit operations and expansion across the region. We support the goal of improving the transit experience in the Bay Area, and will work with the author and Seamless Bay Area to help create a commission that appropriately represents urban core communities and the largest transit operators (e.g. Muni and BART alone carry over 70% of the region’s transit trips), and low-income, disabled, and otherwise disadvantaged communities.</p> <p>Seamless Bay Area has asked the Board to adopt a set of seamless transit principles, which are intended to help the region pursue a seamlessly integrated, world-class transit system. We are working with our partners to review the</p>

		principles and anticipate bringing a recommendation to the CAC on the Seamless Bay Area principles later this month and to the Board for action in March.
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Table 2. Notable Updates on Bills in the 2019-2020 Session

Adopted Positions	Bill # Author	Title and Update
Support	<a href="#">AB 40</a> <a href="#">Ting</a> D	<p><b>Air Quality Improvement Program: Clean Vehicle Rebate Project (CVRP).</b></p> <p>This legislation as initially proposed would have required the California Air Resources Board (ARB) to develop a comprehensive strategy by January 1, 2021 to ensure that all new vehicles are zero-emission by 2040. Late last year, it was amended to instead 1) declare the state policy of placing at least 5 million zero-emission vehicles on state roads by 2030 and 10 million by 2035 and 2) limit eligibility for the CVRP to only those vehicles manufactured by companies that have entered into a specified agreement with ARB to maintain and increase reductions in greenhouse gas emissions. In response to the Trump Administration's July 2019 withdraw of California's authority to set its own stricter vehicle emission standards, a consortium of automakers and California agreed on a voluntary framework to reduce emissions, including Ford, Honda, BMW, and Volkswagen. This bill would have made CVRP rebates available only to purchasers of vehicles manufactured by automakers that agreed to that framework, meaning purchasers of ZEVs from other carmakers would not be eligible for the state's rebate program.</p> <p>The bill did not meet the Jan 31 statutory deadline and is therefore dead, however the Governor is expected to take this up again this year. Other public bodies throughout the state are considering similar restrictions on fleet purchases and pass-through incentive programs. In January, the Bay Area Air Quality Management District directed staff to develop such a policy and will consider adopting it in March.</p>
Oppose Unless Amended	<a href="#">SB 50</a> <a href="#">Wiener</a> D	<p><b>Planning and zoning: housing development: streamlined approval: incentives.</b></p> <p>At its December 10, 2019 meeting, the Board adopted an oppose unless amended position on SB 50, a bill that would, among other things, establish by-right housing height and density standards near high-quality transit. The Board directed staff to seek either amendments to SB 50 or a companion bill that would provide funding for increased transportation capacity, infrastructure projects, and planning support in order to accommodate the increased transit demand induced by new development. However, the bill did not meet the January 31 statutory deadline for two-year bills to leave their house of origin and is therefore dead.</p> <p>The State Legislature and the Governor's Office have indicated their intent to continue to focus this year on addressing the housing and homelessness crisis. We anticipate another attempt to pass these types of reforms before the end of the legislative session.</p>
Watch	<a href="#">SB 278</a> <a href="#">Beall</a> D	<p><b>Metropolitan Transportation Commission.</b></p> <p>This bill is currently a placeholder, which the author intends to amend at a later date to establish a regional transportation measure for the nine county Bay Area.</p>

	<p>We are working with San Francisco agencies and other stakeholders to ensure the bill's policies and expenditure plan will promote the use of regional mass transit and the continued development of an integrated, reliable, regional public transportation system. In particular, we are advocating for the measure to support San Francisco's priorities such as a regional means-based fare program, BART and Muni core capacity programs, transit operations, as well as other key projects such as the Downtown Extension and US 101/I-280 Express Lanes with Bus Service.</p> <p>A number of advocacy coalitions, including FASTER Bay Area and Voices for Public Transportation, support including transit governance and planning reforms in SB 278. Similar to AB 2057 (Chiu), the intent is to ensure that the revenues are used to help create a more seamless and equitable network as well as to create a Transit Network Planner role to establish coordination leadership between existing transit agencies.</p> <p>The region is currently discussing both this potential regional transportation revenue measure and a potential housing revenue measure (as authorized last year through AB 1487 (Chiu)) for the ballot in November 2020. Recent polling has shown that two revenue measures on the ballot simultaneously would struggle to reach the required two-thirds voter support threshold, but a single measure with an expenditure plan that included both transportation and housing would come within the margin of error of achieving two-thirds. At their January 30th and 31st workshops, the MTC Commission and ABAG Executive Board were interested in exploring the possibility of a single revenue measure, to be authorized by SB 278, and dividing the anticipated revenues between transportation and housing projects. The FASTER Bay Area proponents and housing advocates are meeting to discuss this possibility, and what the details of a joint measure could look like, including proportionate shares, administrative body, and the structure of the expenditure plan.</p> <p>We will continue to engage with our partner agencies and local and regional stakeholders to provide our feedback on all aspects of this bill. The timeline to get measures on the November 2020 ballot is tight and a big lift for a revenue measure. Recognizing this, the MTC/ABAG representatives at last week's workshop supporting continued development of a housing-only measure (likely a general obligation bond) in case SB 278 does not advance. Similarly, we are also working with Caltrain, the City/SFMTA, and the two other Caltrain member counties (San Mateo and Santa Clara), on a possible 1/8-cent sales tax on the November 2020 ballot, if another regional transportation measure (FASTER) doesn't seek the same ballot. The sales tax authority was provided by SB 797 (Hill), approved in 2017.</p>
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Table 3. Bill Status for Active Positions Taken in the 2019-2020 Session

Adopted Positions	Bill # Author	Bill Title	Update to Bill Status <sup>1</sup> (as of 2/3/2020)
Support	<a href="#">AB 40 Ting</a> D	Air Quality Improvement Program: Clean Vehicle Rebate Project	Dead (amended then held in Assembly Transportation)
	<a href="#">AB 659 Mullin</a> D	Transportation: emerging transportation technologies: California Smart City Challenge Grant Program.	Dead (held in Assembly Appropriations)
	<a href="#">AB 1286 Muratsuchi</a> D	Shared mobility devices: agreements.	Senate Judiciary Committee
Oppose Unless Amended	<a href="#">AB 326 Muratsuchi</a> D	Vehicles: motorized carrying devices.	Passed from Assembly to Senate Rules
	<a href="#">AB 1112 Friedman</a> D	Shared mobility devices: local regulation.	Senate Transportation
	<a href="#">SB 50 Wiener</a> D	Planning and zoning: housing development: streamlined approval: incentives.	Dead (amended then failed in Senate)
Oppose	<a href="#">AB 553 Melendez</a> R	High-speed rail bonds: housing.	Dead (held in Assembly Transportation)
	<a href="#">AB 1167 Mathis</a> R	Greenhouse Gas Reduction Fund: high-speed rail: forestry and fire protection.	Dead (held in Assembly Transportation)

<sup>1</sup>Under this column, "Chaptered" means the bill is now law, "Dead" means the bill is no longer viable this session, and "Enrolled" means it has passed both Houses of the Legislature. "Two-year" bills have not met the required legislative deadlines and will not be moving forward this session but can be reconsidered in the second year of the session which begins in December 2019. Bill status at a House's "Desk" means it is pending referral to a Committee.

# San Francisco Muni Reliability Working Group

SFCTA Board  
February 25, 2020



CITY & COUNTY OF SAN FRANCISCO

The people of San Francisco believe in a transit first policy for the City and rely heavily on Muni to provide that transit service. They have been generous in supporting proposals to fund Muni. In return they want and deserve a well-functioning, reliable system.

Muni does some things very well and is the envy of other transit agencies for its public support, service levels and system and route distribution. At the same time, Muni must and can do better.

With that in mind, the Muni Reliability Working Group was formed to meet the following goals:

- Review Muni transit operations current improvement efforts and plans
- Reach a shared understanding of where Muni needs support
- Recommend priority actions for policymakers and new Director over 18-24 months period



**Sponsors: Mayor London Breed, Supervisor Rafael Mandelman & Supervisor Aaron Peskin**

**Committee Co-Chair**      **Affiliation**

Gwyneth Borden      Vice Chair, SFMTA Board of Directors  
Ed Harrington      General Manager of SFPUC (former) & Controller (former)

**Committee Member**

Cat Carter	San Francisco Transit Riders
Queena Chen	Chinatown Transportation Research and Improvement Project
James Gallagher	LA Metro
Terrence Hall	TWU Local 250A
Mike Hursh	AC Transit (SFMTA formerly)
Alicia John-Baptiste	SPUR
Kathleen Kelly	Transportation expert (SFMTA formerly)
Roger Marengo	TWU Local 250A
Beverly Scott	Transportation expert

**Additional Interagency Support**



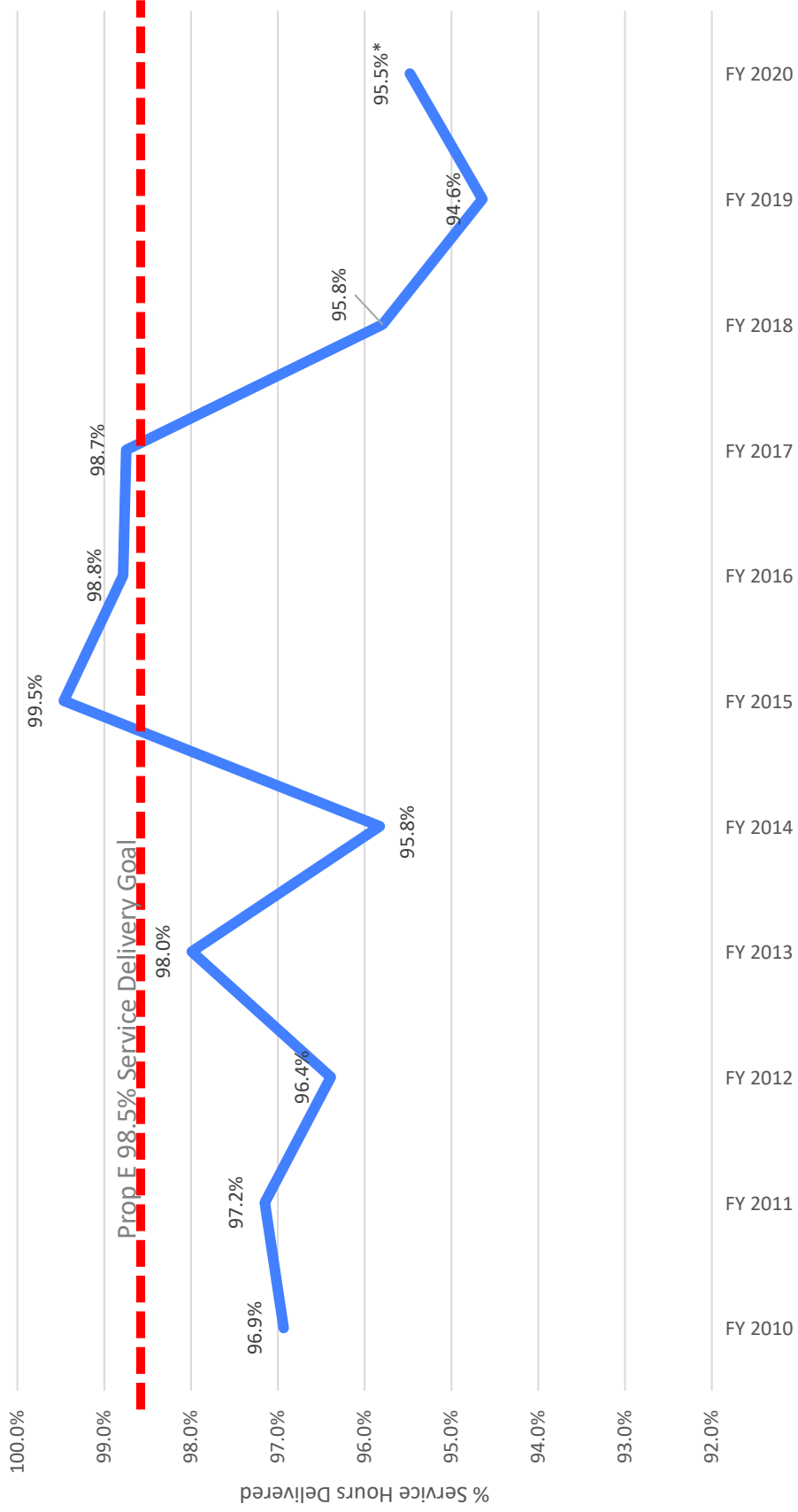
- The working group was convened in June 2019 with sponsorship from the Mayor and Board of Supervisors’ Members Aaron Peskin and Rafael Mandelman.
- Co-chairs were San Francisco Municipal Transportation Agency (SFMTA) Board Vice Chair Gwyneth Borden and former Public Utilities Commission General Manager and Controller Ed Harrington.
- Local and national transit experts, San Francisco advocacy organizations and labor leaders served on the working group, participated in subcommittee work, and made site visits to provide technical advice and expertise to SFMTA.
- The group as a whole met five times between July and December. Four subcommittees were formed and met frequently during the period. These were: Technical and Operations, Workforce and Hiring, Context and Regional, Governance and Organizational.
- Research, analysis and other support was provided by SFMTA and by the Controller’s City Performance group.
- The San Francisco County Transportation Authority (SFCTA) and the City’s Human Resources Department participated in subcommittee work and provided significant technical support to the working group.

The summary charge to the group was to review SFMTA's transit operations and the Agency's current improvement efforts, reach a shared understanding of where Muni needs support, and recommend priority actions for policymakers, SFMTA and a new SFMTA Director over the next 18-24 month period. The group developed the questions below to unify its work across the different committees.

- What resources and broader support are needed to:
  - Meet reliability and performance mandates
  - Meet customer expectations
  - Serve equity needs
  - Serve projected growth
- How can we improve subway performance?
- How can we optimize bus system performance?
- What can we do to address congestion?
- How can we most improve customer experience?

- The Transit Operator shortage has the single most critical effect on Muni reliability, the SFMTA, with support from other City agencies and leadership, must execute every element of the plan to hire, train and fill positions to close this gap
- Given the high percentage of Operators with less than five years of driving experience, increased and sustained investment is needed in training and mentoring of current staff
- Transit Supervisor and related classifications in the SFMTA have a current vacancy rates of up to 17% and existing positions are insufficient to address increasing system complexity and to deliver the full potential of service management technology
- Maintenance classifications in the SFMTA have vacancy rates between 20% and 45% and the SFMTA has insufficient recruitment, apprenticeship and training programs
- Skilled trade and engineering workers are in short supply throughout the Bay Area with many employers competing for a limited pool; larger solutions are needed
- Security challenges impact safety and reliability throughout the system and affect the experience of Muni riders and staff

# Service Impacted by Operator Shortage



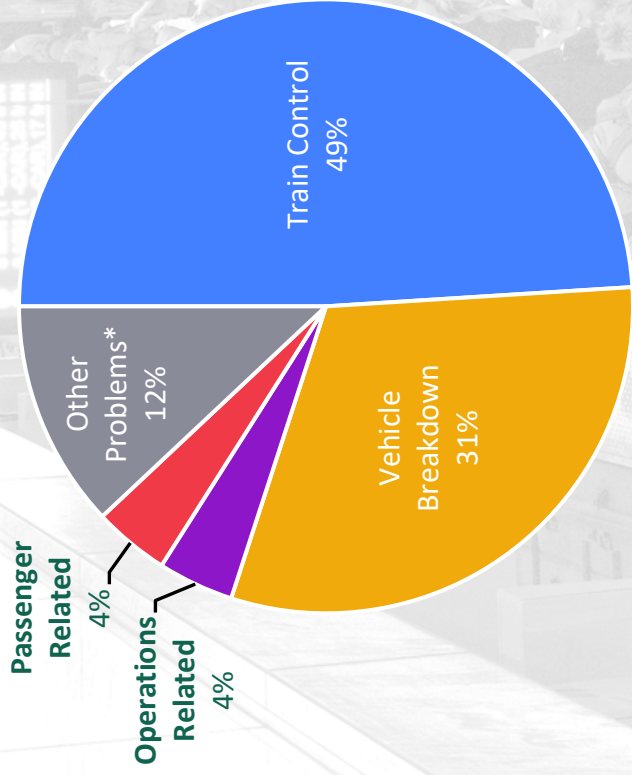
\* FY 20 Complete fiscal year not included. Service delivery calculated between 7/1/2019 and 10/15/2019

- Addressing operator hiring and other work force issues will have the single biggest impact on overall Muni service performance. Hiring should be complemented by investing in staff training and enhanced service design.
- Local and national trends such as the rise of Transportation Network Companies, new mobility methods, and historically low unemployment increasing demand all impact the SFMTA's ability to deliver reliable service
- Muni service faces structural system challenges, especially in the subway; lack of bypass tracks and other design features limit the volume of trains and passengers that can be served by the rail system
- Subway reliability is impacted by an aging train-control system and frequent vehicle breakdowns; daily subway service is also congested as a result of scheduling more trains than the system can support
- SFMTA has taken effective steps to address bus reliability through fleet replacement, an increased focus on preventive maintenance, staff training and a full midlife overhaul program
- Investments in delay reduction, captured by the Muni Forward program, have had a positive impact on the system but remain insufficient to address the dramatic increase in congestion over the past decade

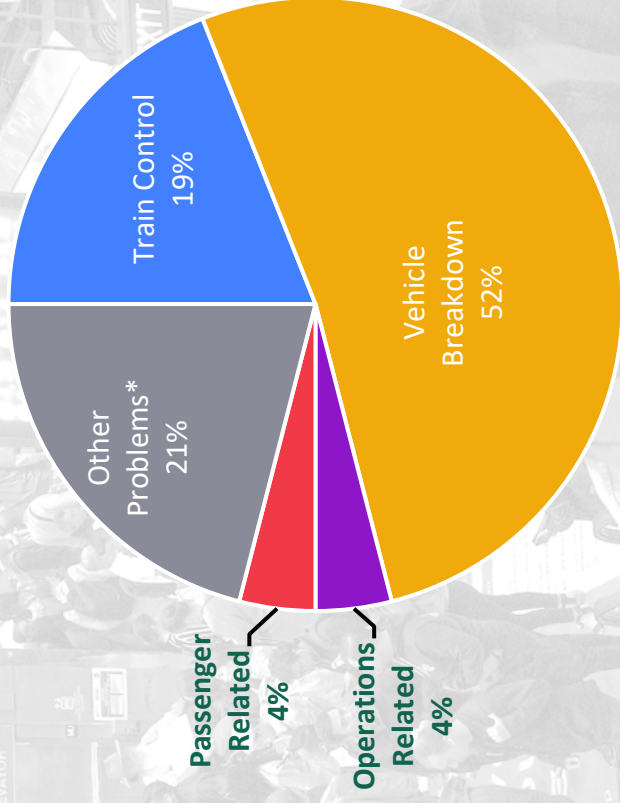


# Sources of Acute Subway Delays

## Delays by Quantity



## Delays by Impact (minutes)



Source: Muni Central Control Log  
January to December 2018

\*Other problems include wayside infrastructure failures plus delays that were uncategorized in the control log. These figures do not include delay due to congestion, only the acute delay associated with each incident.

- Muni operates in a mixed street environment with transit, cars, pedestrians and other users competing for limited roadway space
- Over the past 10 years increasing congestion has caused transit speed and reliability to drop; SFMTA investments and strategies have proven benefits but remain insufficient to address increases in demand
- Investments in delay reduction, including 30 miles of Muni Forward transit priority streets (with 20 more miles legislated), have had a positive impact on the system.
- Proactive policy, regulatory and engineering campaigns are urgently needed to reduce trip time, increase reliability and meet City “Transit-First” and related climate change goals
- SFMTA should have a sustainable model for service expansion to meet demand and goals for mode share, equity and growth
- The City should develop long term capital plans and funding strategies for major subway redesign
- The City should provide a consistent voice and regional leadership for integration and excellence in transit and mobility systems regionally and locally



# Increasing Downtown Congestion

2009



2017



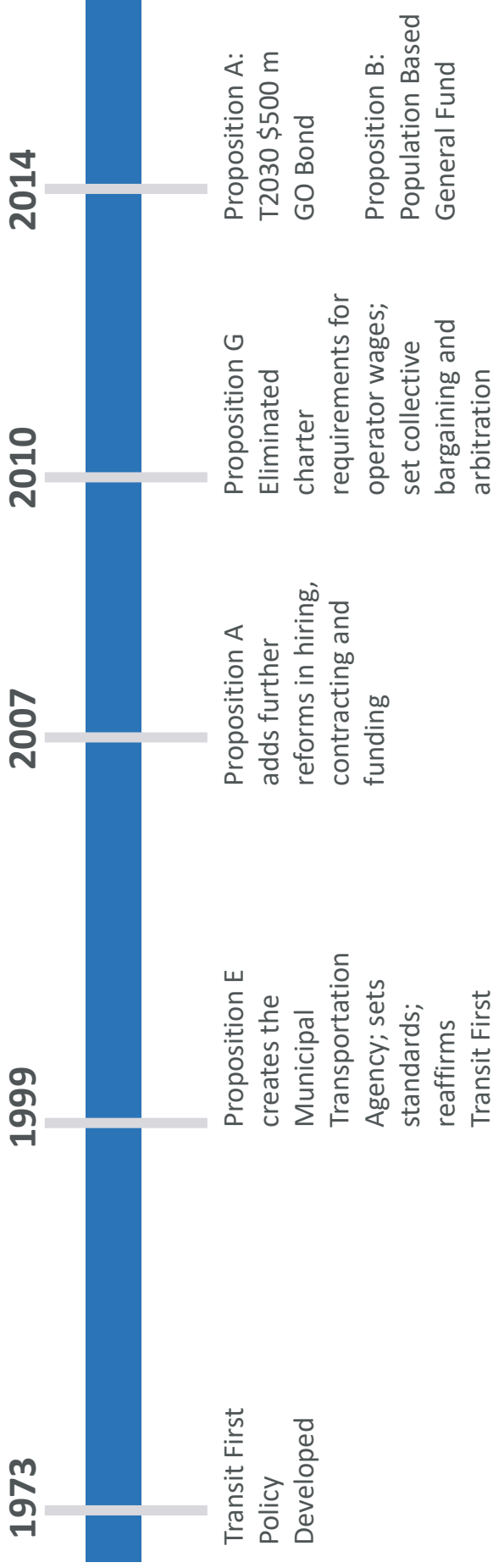
Average Auto Speed (mph)

5.0

55.0

- Overall, the governance and organizational structure of the SFMTA is appropriate and efficient; the Agency is well set up to manage service, financial, planning and regulatory functions with an integrated approach
- Functional consolidation at the SFMTA of transit operations, parking control, and right-of-way design and engineering is unique and benefits Muni service reliability
- The SFMTA has a somewhat lower level of autonomy over budgets, fares and service changes than many peer transit agencies which are typically stand-alone, regional governments serving multiple cities or counties
- The SFMTA needs to improve its ability to design for, respond to and communicate with users and customers. New user-centered design concepts and a broader customer service orientation need to be integrated into the organization

# Transit First City – History of Past Initiatives



**Transit First**

**SFMTA Created**

**Reforms**

**Labor**

**Funding**



## Staffing

- Accelerate operator hiring and training – stabilize by Summer 2021; with attrition and training Muni must graduate approximately 525 new Transit Operators by that date
- Create an SFMTA and citywide effort by June to organize and right- size the transit supervision workforce
- Create an SFMTA and citywide program by June to reduce the significant vacancy rates in maintenance, crafts & engineering
- Explore developing regional and industry coordination efforts for training, certification, apprenticeship and career ladders in the skilled trades that are needed by the SFMTA

## Systems and Vehicles

- Improve long-term subway performance by replacing the system's train control system (5-7 years)
- Finalize a package of interim subway service solutions by June to improve subway performance over the next two years
- Develop a comprehensive approach to accelerate replacement of the Breda fleet, optimize use of the Siemens fleet, and ensure fleet can meet subway performance requirements
- Support and accelerate planned redesign of streets, proactive street management and congestion management strategies to improve transit system performance

- Engage with leadership and stakeholders to affirm and act on Transit First, Muni Forward and Vision Zero as the City's primary mandates in the street environment
- Make investments to improve safety for riders and employees and security for its facilities and fleet

- After current service is stabilized, develop and fund Muni plans for growth to address equity gaps, crowding and population in San Francisco and regionally
- Improve coordination and increase capacity between specific functional areas and divisions including street management and parking control, and capital planning and transit



- Develop the City’s ability to speak with one voice on regional issues and funding priorities
- The Bay Area must work together to develop and take new proactive measures to grow local and regional capacity for planning, funding, building and integrating major transit projects and systems; San Francisco should be a leader in this effort

- Explore new concepts, organizational structures and practices to grow and improve the Agency's customer experience and communications functions
- Improve Operator communications and feedback loops related to service conditions



MUNI

TEST  
TRAIN

TEST  
TRAIN

[sfmta.com](http://sfmta.com)

DO NOT PASS

# Next Steps

# Implementation

*SFMTA & Controller's Office*



# Memorandum

## AGENDA ITEM 7

**DATE:** February 18, 2020  
**TO:** Transportation Authority Citizens Advisory Committee  
**FROM:** Eric Cordoba - Deputy Director for Capital Projects  
**SUBJECT:** 02/26/2020 Citizen Advisory Committee Meeting: Progress Report for Van Ness Avenue Bus Rapid Transit Project

<p><b>RECOMMENDATION</b>    <input checked="" type="checkbox"/> Information    <input type="checkbox"/> Action</p> <p>None. This is an information item.</p> <p><b>SUMMARY</b></p> <p>This is the monthly progress report on the San Francisco Municipal Transportation Agency’s (SFMTA’s) Van Ness Avenue Bus Rapid Transit (BRT) project requested by the Citizens Advisory Committee (CAC). The project incorporates a package of transportation improvements along a 2-mile corridor of Van Ness Avenue, between Mission and Lombard streets, including dedicated bus lanes, consolidated transit stops, and pedestrian safety enhancements. The cost of the BRT project is \$169.6 million. The BRT project is part of an overall larger Van Ness Improvement Project, totaling \$309.3 million, which combines the BRT project with several parallel infrastructure upgrade projects. There are no significant changes to report since the last update to the CAC. Utility (water, sewer, electric) construction is the current critical work activity. The project is approximately 46.4% complete compared to 45.2% reported in January.</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Fund Allocation</li> <li><input type="checkbox"/> Fund Programming</li> <li><input type="checkbox"/> Policy/Legislation</li> <li><input type="checkbox"/> Plan/Study</li> <li><input checked="" type="checkbox"/> Capital Project Oversight/Delivery</li> <li><input type="checkbox"/> Budget/Finance</li> <li><input type="checkbox"/> Contract/Agreement</li> <li><input type="checkbox"/> Other: _____</li> </ul>
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## DISCUSSION

### Background.

The Van Ness Avenue BRT aims to bring to San Francisco its first BRT system to improve transit service and address traffic congestion on Van Ness Avenue, a major north-south arterial. The Van Ness Avenue BRT is a signature project in the Prop K Expenditure Plan, a



regional priority through the Metropolitan Transportation Commission's Resolution 3434, and a Federal Transit Administration Small Starts program project.

The construction of the core Van Ness Avenue BRT project, which includes pavement resurfacing, curb ramp upgrades, and sidewalk bulb outs, is combined with several parallel city-sponsored projects. These parallel projects, which have independent funding, include installing new overhead trolley contacts, street lighting, and poles replacement; SFgo traffic signal replacement; sewer and water line replacement; and storm water "green infrastructure" installation.

**Status and Key Activities.**

The construction team continues to work along multiple sections of Van Ness Avenue. Ranger Pipelines Inc. (Ranger) continued installing mid-block water pipes on the east side of Van Ness Avenue between Vallejo and Union streets, and started water installation, between Broadway and Pacific Avenue. Ranger also worked on installing water pipe at intersections at night between Ellis and Sutter streets. Ranger completed mid-block sewer installation between Broadway and Vallejo Street, and started sewer installation between Jackson Street and Pacific Avenue. Ranger also connected sewer laterals and catch basins between Jackson and Lombard streets.

Michael O'Shaughnessy, a Ranger Pipelines subcontractor, completed mid-block sewer installation between Market and Fell streets, and worked on the sewer installation between Bush and California streets. This work also includes night work at intersections. Michael O'Shaughnessy also started water installation between McAllister and Grove streets. The San Francisco Public Utilities Commission also completed water connections to recently installed water pipes at O'Farrell Street. Both sewer and water construction may be completed by the fall of 2020. However, testing and chlorination of water pipes will take longer to complete.

Bauman Landscape and Construction continued mid-block roadway work and sidewalk replacement on the east side of Van Ness Avenue, between McAllister and Eddy streets. This work included the demolition of the existing sidewalk and pouring new concrete sidewalks. Bauman also install sidewalk pavers and completed sidewalk replacement on the east side of Van Ness Avenue, between Pine and California streets.

Phoenix Electric (Phoenix) completed electric duct bank installation between Washington and Jackson streets, and started electric duct bank installation between Clay and Washington streets. Phoenix also started to install duct bank facilities at Union Street and at Filbert streets. Phoenix worked on traffic signal and streetlight installation between Eddy and Sutter streets, and overhead catenary system between Geary Boulevard and Sutter streets.

Van Ness Avenue continues to accommodate two lanes of northbound and southbound traffic along the corridor project limits. The project team is using temporary traffic control measures such as channelizer traffic cone and variable message signs to direct traffic. Temporary bus stop platforms have also been installed on both sides of Van Ness Avenue as needed.

In February, the Van Ness Improvement Project will request that the SFMTA Board approved a contract modification for \$636,939 for additional sewer and roadway work. These design



changes include the addition of catch basins and related sewer work at various intersections on Van Ness Avenue, as well as allowance for additional traffic control, OCS support, bus pads, concrete base, and hot mix asphalt. The changes also include additional cost for grading curb ramps and sidewalks and parking strips located north of McAllister Street, to comply with Americans with Disabilities Act. These changes are not expected to delay completion of the project. If approved, the total contract amount will increase to \$215,448,180. We are following up with SFMTA staff to clarify the updated funding plan for the project.

**Public and Business Outreach.**

SFMTA project staff continues to host monthly Van Ness Business Advisory Committee meetings and Van Ness BRT Community Advisory Committee meetings to provide project updates and address issues businesses and residents are having on Van Ness Avenue. These two advisory committees usually have an average of 12 participants, combined, each month. Technical advisory services are also provided to impacted businesses by the Office of Economic and Workforce Development's Open for Business program, including legal assistance services, financial assistance, training and technical assistance, and grant and loan programs. In April, when we anticipate calendaring a presentation on the Van Ness BRT project, we will invite OEWD to provide updates on the effectiveness of the business mitigation efforts and to answer questions the CAC may have on this topic.

**Project Schedule, Budget and Funding Plan.**

The project is approximately 46.4% complete, compared to 45.2% complete, reported in January to the CAC. The original late 2019 BRT service start date has been revised to December 2021 (Attachment 1) due to construction difficulties. Walsh Construction expenditures to date totaled \$122.4 million out of the \$215.4 million contract amount for the Van Ness Ave Improvement Project.

SFMTA is updating the funding plan, as it intends to address this \$9.8 million funding gap during its next Capital Improvement Program update planned for mid-2020. SFMTA may seek additional sources of funds and consider deferring uninitiated projects to fill the anticipated Fiscal Year 2020/21 budget need, toward the end of construction and project closeout. SFMTA is considering sources of funds such as Federal Transit Administration State of Good Repair and Prop K. San Francisco Public Utilities Commission will also increase funds from \$54,942,761 to \$61,543,618, due to sewer and water work changes.

Construction soft costs, which include SFMTA and San Francisco Public Works staff, consultant, and bus substitution costs, total \$28.9 million as of the beginning of January 2020, out of \$37.8 million budgeted.

**Current Issues and Risks.**

The project is currently more than a year and a half behind schedule, primarily due to challenges securing a utility subcontractor and the extent of utility conflicts encountered in the field. Unanticipated existing water and sewer pipe conditions required design changes, such as resequencing of construction, resizing of new pipes, or slip-lining existing sewer lines instead of installing new lines. However, Ranger Pipelines currently has two utility subcontractors



installing sewer and water works, which we believe will help accelerate utility construction completion. As previously reported, additional unforeseen work-- installation of new concrete base at various locations along Van Ness Avenue has increased the scope of the project and caused additional contract workdays. There may be additional potential delays if we experience a heavy rain season this winter. In addition to needing to address the \$9.8 million funding gap described earlier, the SFMTA team continues to negotiate with Walsh to resolve potential claims and disputes as they arise.

### **FINANCIAL IMPACT**

None. This is an information item.

### **SUPPLEMENTAL MATERIALS**

- Attachment 1 - Project Schedule



### Attachment 1: Van Ness Avenue BRT Project Schedule

Activities	2013				2014				2015				2016				2017				2018				2019				2020				2021				2022			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
1. Conceptual Engineering + Environmental Studies*																																								
2. Preliminary Engineering (CER)																																								
3. Final Design																																								
4. Construction Manager-General Contractor Process																																								
5. Construction																																								
6. Revenue Operations Begin																																								
* Conceptual Engineering and Environmental Studies began in 2007																																								

Date: June 20, 2019

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SFMTA

AGENDA ITEM 9

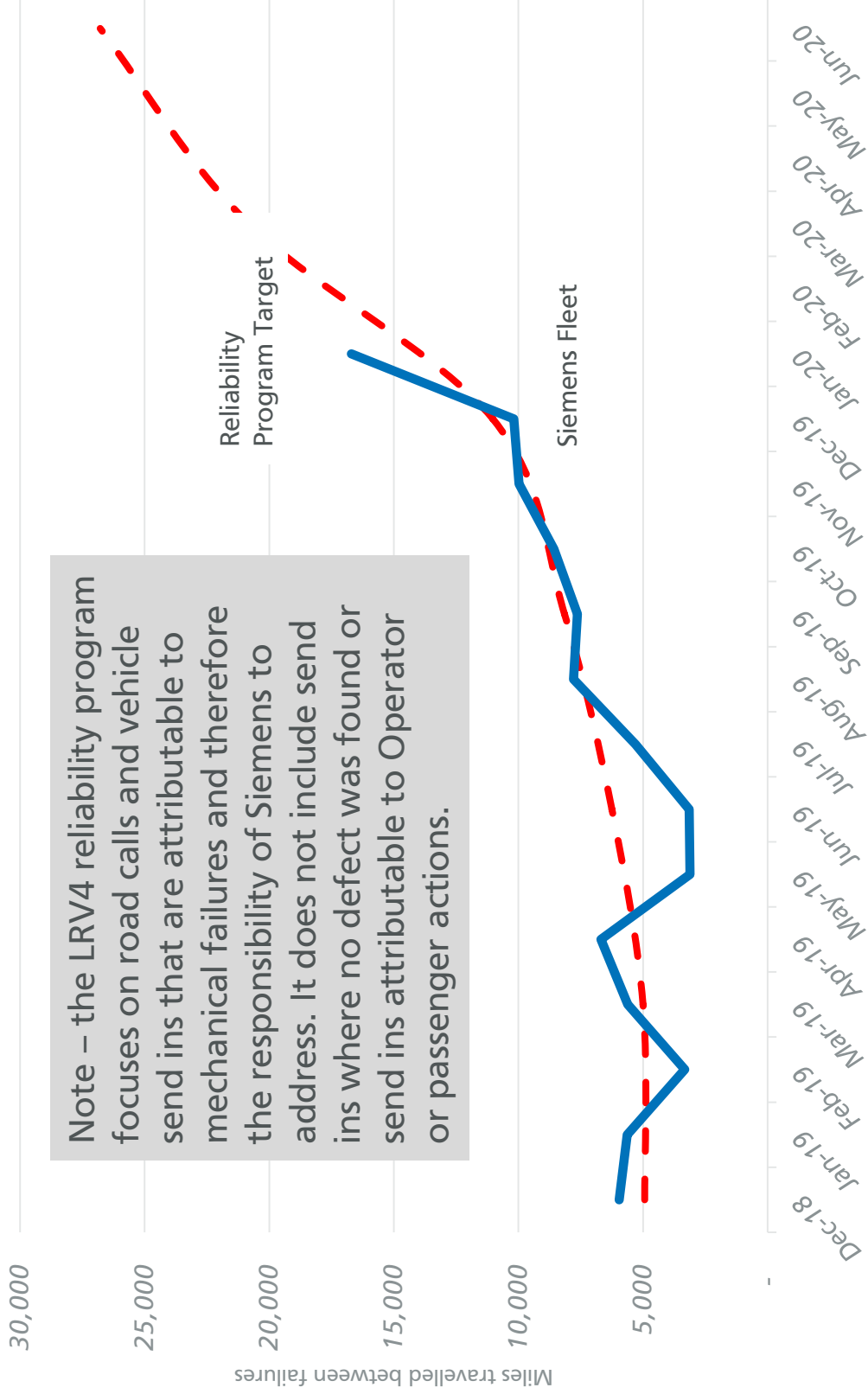


# LRV4 Project Update

SFCTA CAC Meeting

February 26, 2020

# LRV4 Reliability Program



Note – the LRV4 reliability program focuses on road calls and vehicle send ins that are attributable to mechanical failures and therefore the responsibility of Siemens to address. It does not include send ins where no defect was found or send ins attributable to Operator or passenger actions.

January figures are preliminary and subject to change

# In Service Breakdowns - Warranty Items

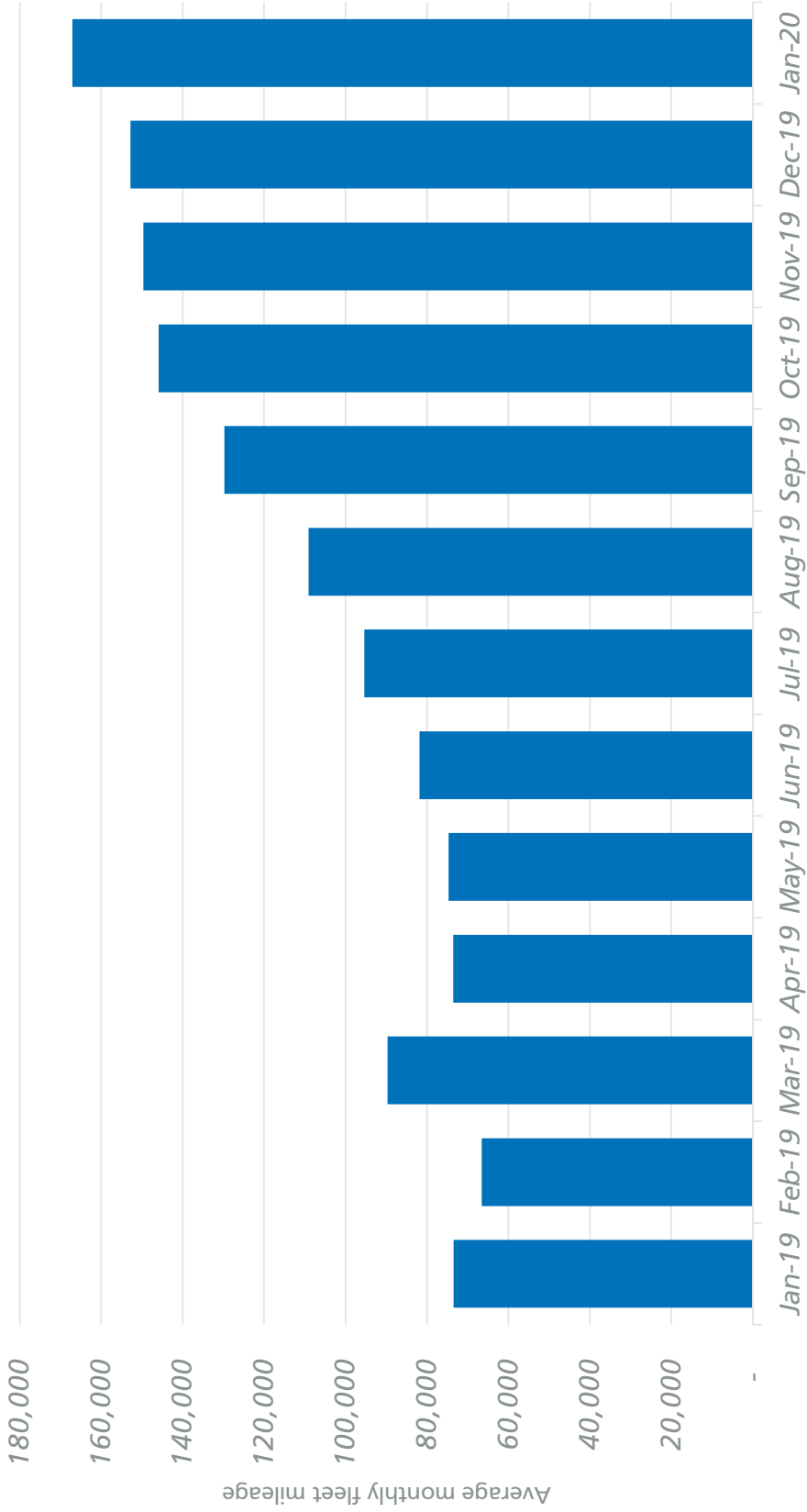
Issue	Count	Status	Comment
Hydraulic Power Unit Failure (brake system)	<b>59</b>	✓	All revenue cars modified
CCTV Failure	16		Software upgrade under evaluation
Loose Wire Termination	15	✓	Known issues fixed
Cameras (water intrusion)	14	✓	Cameras on all cars modified
Step Extension/ Gap Filler	10	✓	Adjustments complete
Misaligned doors	9		Door adjustment demo in process
Propulsion	9	✓	Addressed with latest software
Auxiliary Power Supply (APS) Reliability	8	✓	Modification complete
Pantograph	7	✓	Inaccurate fault warning - software fix
Brake Control Unit	5		Evaluation underway to determine if individual incidents are related

Note: other key issues addressed under warranty include installation of additional door sensitive edges and redesigned coupler end stop.

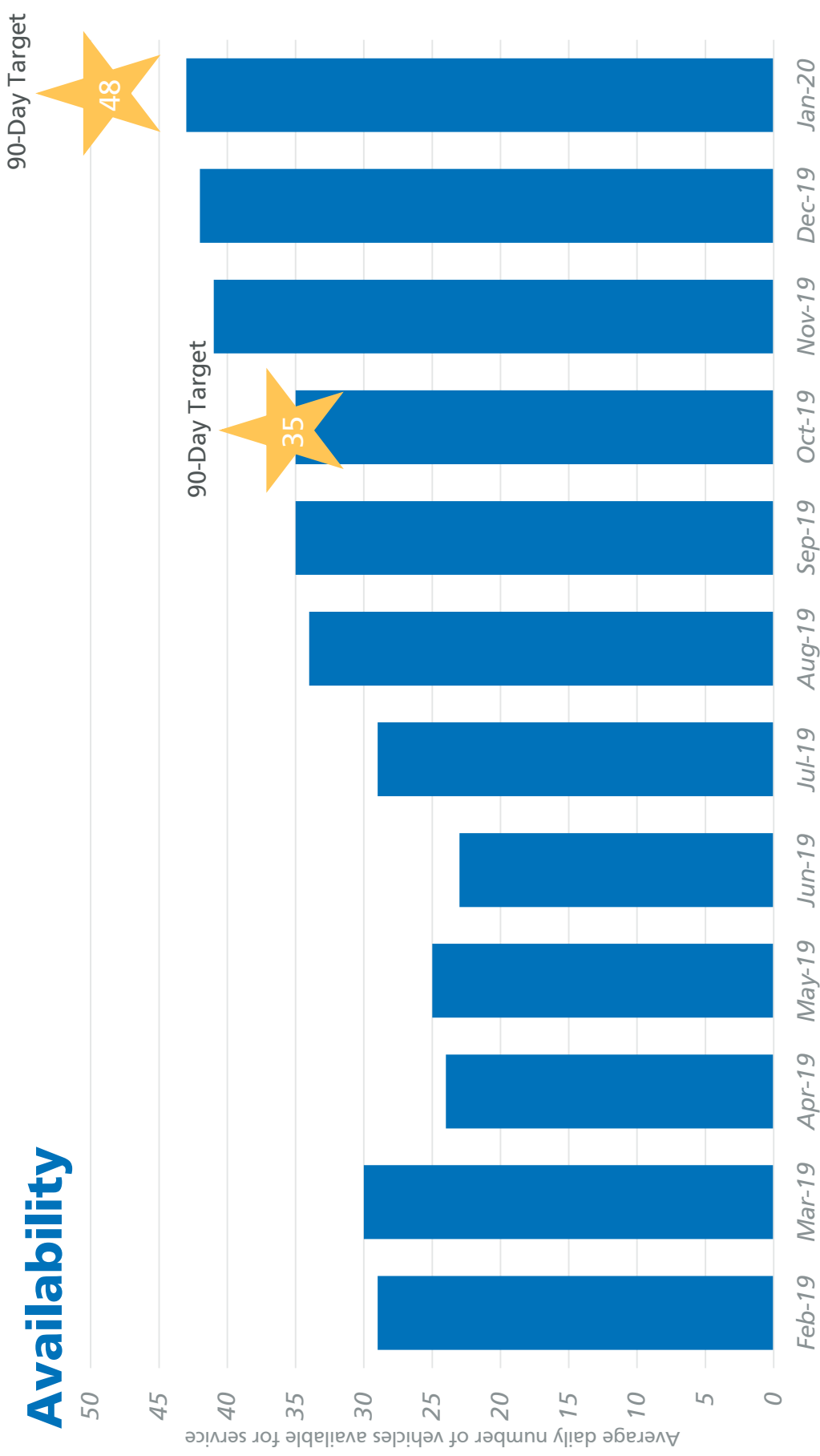
# LRV4 Monthly Mileage

Improved vehicle availability enabled LRV4 service to **double** in 2019

## Mileage

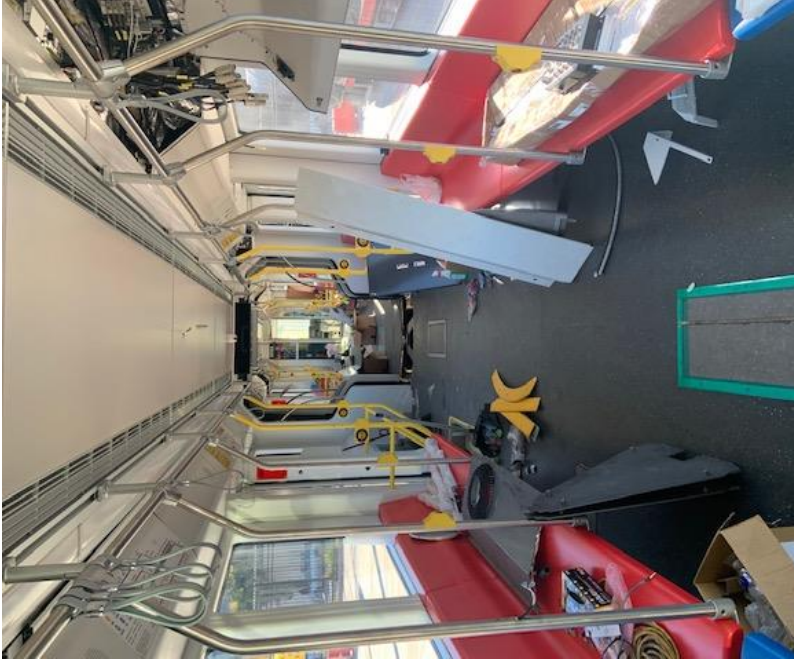


# LRV4 Fleet Availability



# Next steps for availability

- Purchase remaining 3 cars:
  - Original test cars (2001, 2003) getting latest configuration (spring)
  - Car 2033 on property, but heavily borrowed from to keep other vehicles in service (summer)
- Replace minimum diameter wheels on 6 trains (at least 1 per month)
- Eliminate flat wheels - 51 Vehicles have had additional track brakes installed, expected completion in March



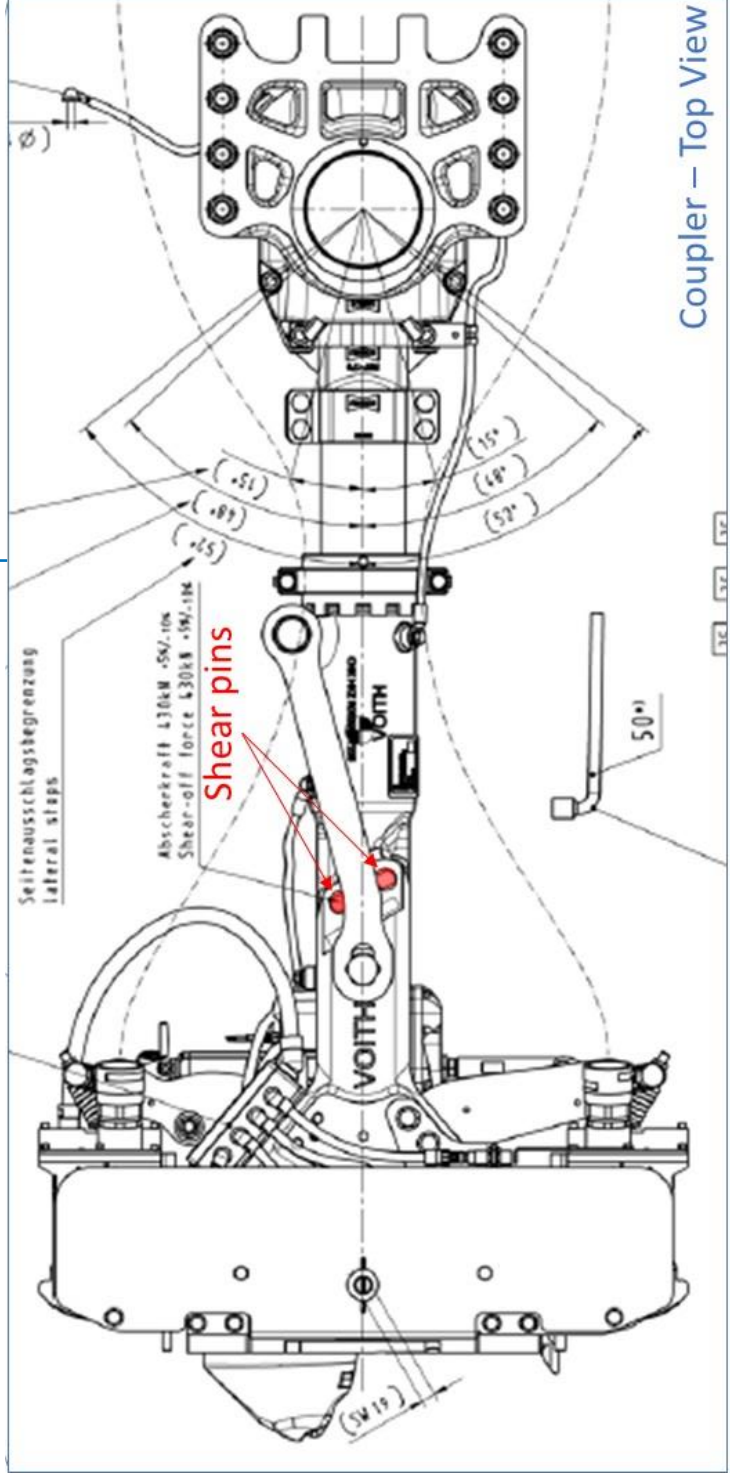
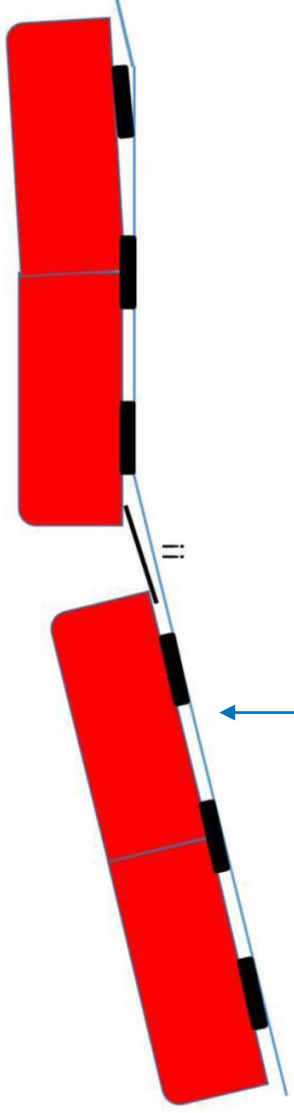
*Train 2033 has not been purchased but is at SFMTA; parts have been borrowed from this train to keep others in service - all parts will be restored this Summer*



# Shear pin update

- Dec 11: Shear pins failed in service, two-car operations was restricted
- Dec 23: All shear pins replaced, two-car operations resumes without restrictions (pins will continue to be replaced every 90 days)
- Jan 2020: Data gathering completed, primary cause is sudden change of gradient at intersections
- Feb 2020: Full evaluation of data and redesign to address issue underway
- All costs covered by Siemens under warranty

# Shear pin diagram



# Seat modification design underway

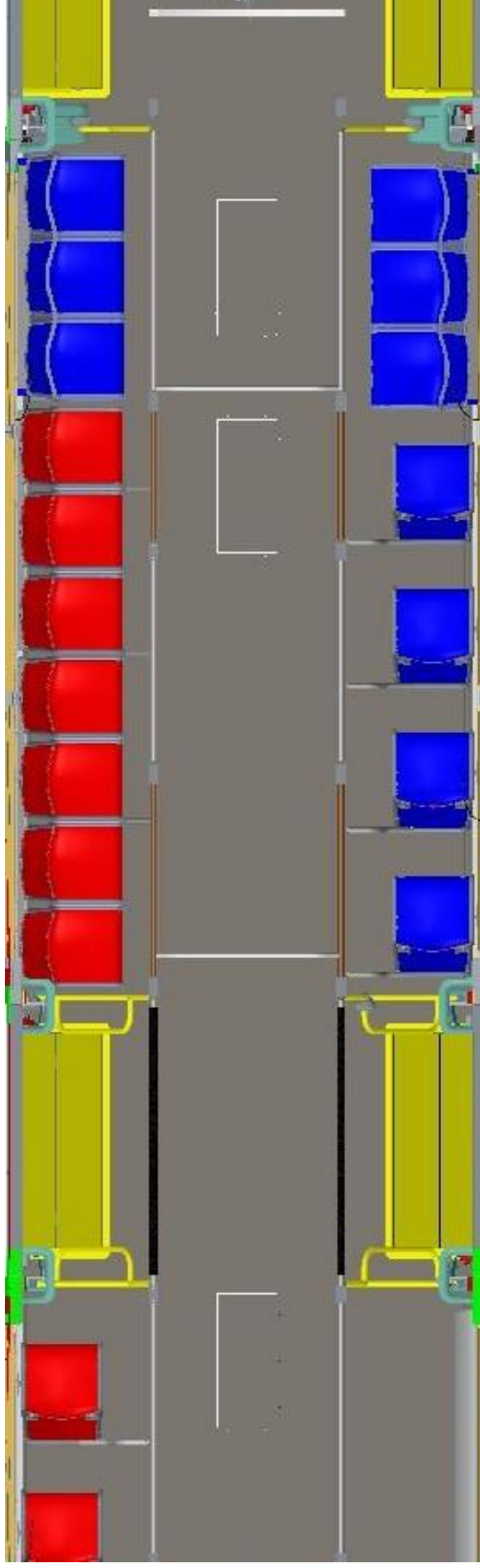
<b>FLEET</b>	<b>INTERIOR DESIGN MODIFICATION</b>
50 replacement	Convert half of longitudinal seats to single transverse
101 replacement	Convert half of longitudinal seats to double transverse
68 expansion	Retrofit bench seating style to individual seats, convert half of longitudinal seats to single transverse

# Seating Arrangement – Single



*More blue seats will be added based on customer feedback*

# Seating Arrangement - Plan view, single seats



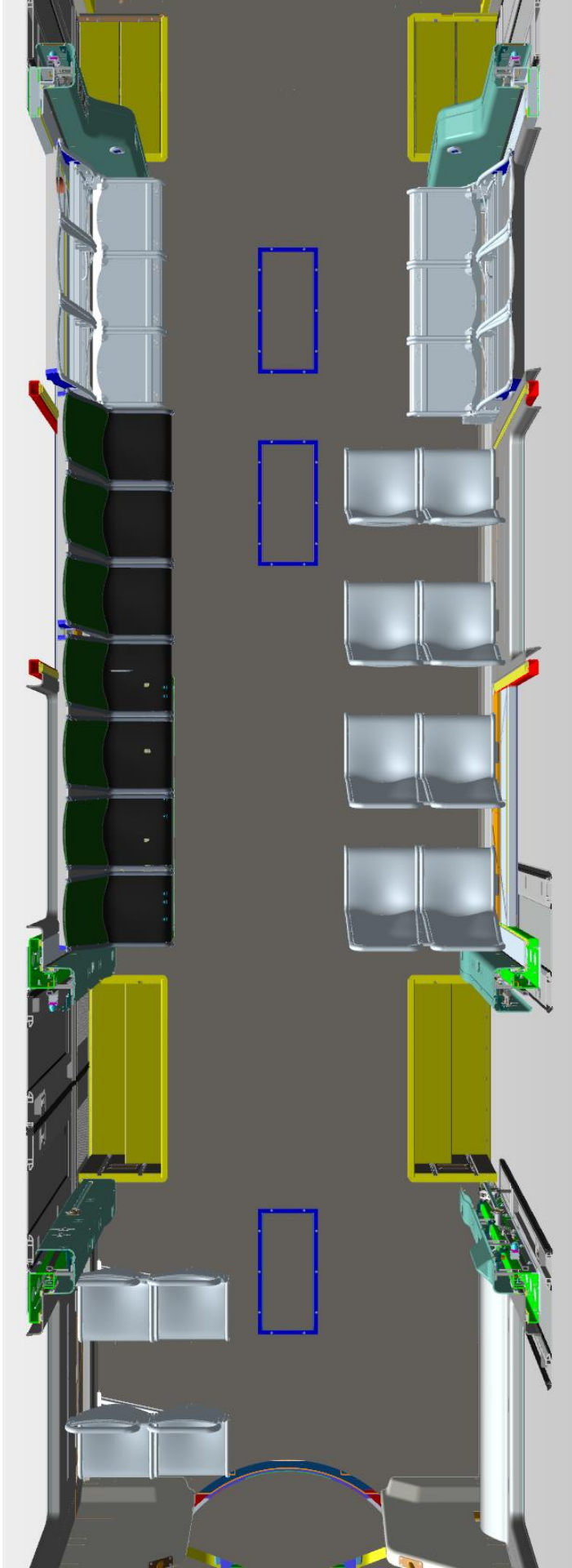


# Seating Arrangement - Double



*More blue seats will be added based on customer feedback*

# Seating Arrangement - Plan view, double seats



# Next Steps

- Request Prop K sales tax funding from SFCTA Board
- Initiate Contract Mod 7 for Phase 2 Breda replacement
- Re-design coupler to address shear pin issue
- Complete track brake installation end of March
- Accept remaining 3 cars and replace minimum diameter wheels on 6 cars
- Work with Operators to upgrade monitors



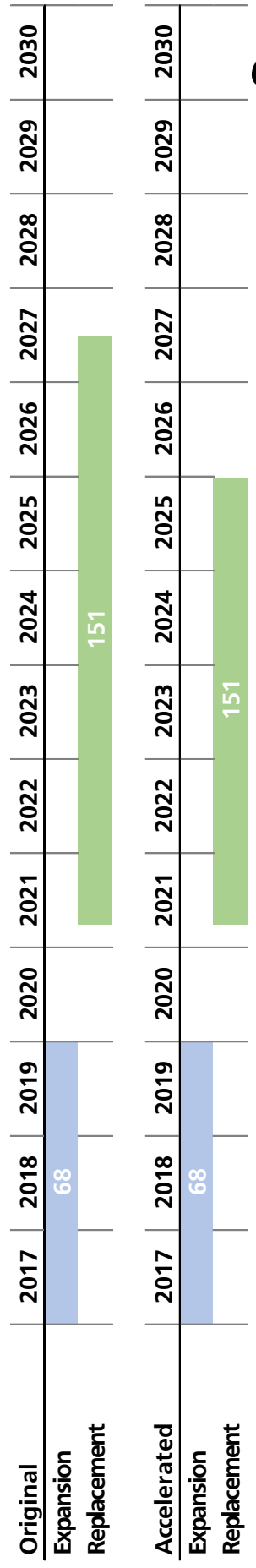
*Track brake highlighted in purple. Additional track brakes are being installed on the front and back of the train to reduce flat wheels and improve vehicle availability*



# Mod 6 and 7 Overview

Phase 1 lessons learned, including feedback from customers, operators and mechanics will be incorporated into Phase 2

- Breda early retirement (offsite car shell production) \$25M
- Seating changes (Phase 1, 2) \$18M
- Track brakes (Phase 1, 2) \$5M
- Additional Phase 2 changes \$5M



# Contract Mod. 7 Items

Update	Description	Team
Track Brakes Installation, Phase 2	Adding track brakes to all 151 Phase 2 vehicles to alleviate flat wheels.	Maintenance
Implementation of Interior Seating – Phase 1 Single Transverse	Seat changes, retrofits 68 Phase 1 vehicles with single transverse seating and related reconfigurations.	Passenger
Implementation of Interior Seating – Phase 2 Single Transverse	Seat changes, production of first 50 Phase 2 vehicles with single transverse seating and related reconfigurations.	Passenger
Implementation of Interior Seating – Phase 2 Double Transverse	Seat changes, production for 101 Phase 2 vehicles with double transverse seating and related reconfigurations.	Passenger
Lockable Convenience Outlet	A lockable cover will be added to the convenience outlet for all 219 Vehicles.	Operations/ Maintenance

# Contract Mod. 7 Items (cont'd.)

Update	Description	Team
Televic Passenger Information System change items	Multiple Passenger Information System (PIS) enhancements to update the technology consistent with evolving needs and expectations.	Passenger
TDR6 HDD Unmounted	The TOD will display a message when the TDR6 HDD is unmounted to assist maintenance, troubleshooting, and verifying readiness for service for all 219 Vehicles .	Operations/ Maintenance
Corner Hatch additional retention clips	The Corner Hatch will be modified to prevent it from quickly opening when unlocked for all 219 Vehicles.	Operations/ Maintenance
Replace door touch strips with passenger door open PBs	On 151 Phase 2 vehicles only, each doorway shall have 'keep door open' push buttons instead of the touch strips	Passenger

# Contract Mod. 7 Items (cont'd.)

Update	Description	Team
Push to Close locking feature addition to exterior EDR door	The Exterior Manual Emergency Door Release access panel when include a locking feature when pushed closed for all 219 Vehicles.	Operations/ Maintenance
Pre Wiring for Additional Clipper card readers	Wiring for additional Clipper card readers will be included on 151 Phase 2 Vehicles.	Passenger/ Operations
Provisions for ease of tire replacement	Wheel hubs specified in this change will be designed with a hole pattern for easier tire replacement and use with shop equipment on 151 Phase 2 Vehicles.	Maintenance
PIS 40 A pattern change	The Passenger Information System will be modified to allow remote and manual changes to information displays at any time.	Passenger/ Maintenance

# LRV4 Funding plan

Funding Source	Amount
Prop K Sales Tax	\$ 191,885,171
Revenue Bond	\$ 145,050,650
CCSF - Education Revenue Augmentation Fund (ERAF)	\$ 19,247,904
Regional Measure 3	\$ 7,122,556
Central Subway	\$ 16,800,000
SFMTA Operating	\$ 8,000,000
Federal Transit Administration (FTA)	\$ 526,875,814
Bridge Tolls (Metropolitan Transportation Commission)	\$ 79,838,236
Transit and Intercity Rail Capital Program (TIRCP)	\$ 113,140,000
ERAF or SFMTA Fund Balance	\$ 19,000,000
<b>Total</b>	<b>\$ 1,126,960,331</b>

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# Memorandum

## AGENDA ITEM 10

**DATE:** February 21, 2020

**TO:** Transportation Authority Board

**FROM:** Eric Cordoba- Deputy Director for Capital Projects

**SUBJECT:** 2/25/20 Board Meeting: Independent Management and Oversight Report on the San Francisco Municipal Transportation Agency's Siemens Light Rail Vehicle Procurement

<p><b>RECOMMENDATION</b>    <input checked="" type="checkbox"/> Information    <input type="checkbox"/> Action</p> <p>This is an information item.</p> <p><b>SUMMARY</b></p> <p>On April 23, 2019 the Board continued consideration of the San Francisco Municipal Transportation Agency's (SFMTA's) request for \$62.7 million in Prop K funds for the Siemens Light Rail Vehicle Procurement in light of safety and reliability issues with the vehicle's doors, brakes, and shear pins, among others. The Board directed staff to conduct independent oversight to identify the root cause of problems, effective fixes, as well as determine whether the cost of the solutions are covered under warranty or at the SFMTA's expense. We secured the services of T.Y. Lin International to conduct an in-depth review of the issues raised. At the February 25 Board meeting, Robert Sergeant, Director of Rail and Transit for T.Y. Lin will present their findings and recommendations, which are summarized in the slide deck and detailed in the final report (Attachments 1 and 2). Overall, the findings note that good progress is being made with repairs completed, increased availability of vehicles, and significantly improved reliability. There are a number of recommendations reflecting lessons learned and the need for continued oversight through attainment of the Mean Distance Between Failures (MDBF) reliability requirement and Phase 1 warranty repairs. We are working on a revised Prop K allocation request that incorporates the recommendations included in this report.</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Fund Allocation</li> <li><input type="checkbox"/> Fund Programming</li> <li><input type="checkbox"/> Policy/Legislation</li> <li><input type="checkbox"/> Plan/Study</li> <li><input checked="" type="checkbox"/> Capital Project Oversight/Delivery</li> <li><input type="checkbox"/> Budget/Finance</li> <li><input type="checkbox"/> Contract/Agreement</li> <li><input type="checkbox"/> Other</li> </ul>
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## DISCUSSION

### Background.

In 2014, the SFMTA contracted with Siemens Industry Inc. for the procurement of fourth-generation light rail vehicles (LRV4). This included a Phase 1 order of 24 LRVs (subsequently expanded to 68) for fleet expansion, a Phase 2 order of 151 vehicles to replace the existing Breda fleet which is reaching the end of its useful life, and options for an additional 41 LRVs for a total potential order of up to 260 light rail vehicles with a not to exceed price of \$1,192,651,577. The Transportation Authority has thus far contributed \$131 million in Prop K funds for this procurement. As of December 2019, 65 LRV4s are commissioned and available for service. The remaining three LRVs in the Phase 1 procurement have been assembled but not commissioned.

The T.Y. Lin International staff reviewed a substantial amount of available background material including contract documents, root cause analyses, testing and commissioning plans and reports and documentation regarding repair progress. They conducted a multi-day investigation of the current state of repairs during September 2019 in conjunction with SFMTA. T.Y. Lin staff also participated in weekly commissioning team meetings and met with operators and union representatives to gain insight on their perspective.

### Findings and Recommendations.

T.Y. Lin provides an oversight report describing the status and recommendations for a range of LRV issues (Attachment 1). They concluded that many issues have been resolved (including all safety issues), and those that remain are performance-related and being addressed, but warrant continued oversight and monitoring.

Issues that have been resolved and are under warranty include:

<b>Issues</b>	<b>Repair Solutions</b>
<b>Door Safeguards</b>	Additional sensitive edges added to doors.
<b>Pantographs</b>	Electrical shunts added and nuts/bolts replaced
<b>Aux. Power Supply</b>	Brackets modified
<b>Hydraulic Power Unit</b>	Motor-driver boards, wiring and control valves have been re-engineered





In Attachment 2: Program Management Oversight Presentation on SFMTA LRV Procurement, slide 5 provides a summary of issues In-Progress, cost/responsibility (e.g. warranty repair or SFMTA cost), and the anticipated timeline for completion.

<b>Issues</b>	<b>Repair Solution</b>	<b>Cost/Responsibility</b>	<b>Timeline</b>
<b>Wheel Flats</b>	Phase 1 LRV4s being retrofitted with additional set of track brakes	\$1.75 M at SFMTA cost	March 2020
<b>Couplers</b>	Temporary fix (shear pin replacements) in place  Second round of investigation and testing is underway.	Warranty repair	Testing and analysis to be completed in February, with repairs starting in June
<b>Cameras</b>	SFMTA evaluating camera and monitor size and type	\$1.6M at SFMTA cost for upgrade (estimate)	Timing for upgrade to be determined
<b>Seating</b>	Revised seating style and height have been identified	\$20.2 M at SFMTA cost for upgrade (estimate)	To be determined (Mod 7)
<b>CCTV</b>	Modify software to improve integration	Warranty repair	To be determined
<b>Door Adjustment</b>	Adjustments have been made and testing is in progress	Warranty repair	To be determined
<b>Brake Control Unit</b>	Analysis of brake lock-ups is on-going	Warranty repair	To be determined



Attachment 2 - Slide 6 contains a similar table focused on reliability issues. Of particular note, the MDBF has improved from 4,000 miles in July to about 17,000 miles in January, but is still below the 25,000 miles (average for 6 months) contract goal. SFMTA staff projects Siemens (the LRV manufacturer) will achieve this goal in June 2020.

<b>Issue</b>	<b>Repair Solution</b>	<b>Cost/ Responsibility</b>	<b>Timeline</b>
<b>LRV Availability</b>	65 of 68 LRV4s commissioned. Daily availability of LRV4s in January was 43. Improving due to warranty repairs	Siemens	Commissioning of final 3 LRV4s scheduled for Spring/Summer
<b>Mean Distance Between Failure (MDBF)</b>	Improved from 4,000 miles in July to approximately 17,000 miles in January	Siemens	SFMTA projects 25,000 miles to be achieved in June 2020
<b>Spare Parts</b>	Improved estimates of spare parts inventory need  SFMTA and Siemens to prepare Spare Parts Plan	SFMTA/Siemens	September

Based on their review, T.Y. Lin's recommendations include:

- Ensure resolution of remaining Phase 1 repair strategies
- Take stock of lessons learned to apply to the Phase 2 procurement
- Conduct design reviews prior to issuing the Notice to Proceed for Phase 2
- Clarify the MDBF contractual requirements and consequences of not meeting contract specification (SFCTA funding condition)
- Revise spare parts requirements



- Continue SFCTA monitoring and oversight through Phase 1 LRV attainment of MDBF and delivery of Phase 1 warranty repairs.

*The recommendations are summarized on Attachment 2 - slide 8 and found on page 27 of the report.*

### **FINANCIAL IMPACT**

None. This is an information item.

### **CAC POSITION**

None. This is an information item. The CAC will be briefed on this item at its February 26 meeting in advance of considering acting on the updated Prop K allocation request for the LRV procurement.

### **SUPPLEMENTAL MATERIALS**

- Attachment 1 - Program Management Oversight Report for SFMTA Light Rail Vehicles Procurement
- Attachment 2 - Presentation slides

## Attachment 1

**PROGRAM MANAGEMENT OVERSIGHT REPORT****FOR****SFMTA LIGHT RAIL VEHICLE PROCUREMENT**

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## Section 1. Executive Summary

The San Francisco Municipal Transportation Agency (SFMTA or MUNI) contracted with Siemens Industry Inc for the procurement of Light Rail Vehicles (LRV4) in 2014. This included a Phase 1 order of 24 LRVs that has been expanded to 68, including 4 additional cars procured separately for the opening of the Chase Center, a Phase 2 order of an additional 151 vehicles to replace the existing Breda fleet and options for an additional 45 LRVs for a total potential order of up to 264 light rail vehicles with a not to exceed price of \$1,192,651,577. A portion of the budget for this procurement is coming from the San Francisco County Transportation Authority (SFCTA). This report represents a portion of SFCTA's fiscal oversight associated with the procurement funding. The focus of this oversight is safety and performance, as well as to clarify financial responsibility (change orders vs warranty items)

The initial LRV4 was delivered, tested, commissioned and placed into service in November 2017. As of December 2019, 65 LRV4s are commissioned and available for service. The remaining three LRVs in the phase 1 procurement have been assembled but not commissioned. Two vehicles are at the Muni Maintenance facility and one remains at Siemens plant in Sacramento. Since the initial roll out of the Siemens LRV4s a number of safety and operational issues have developed. This report summarizes the major items, describing the issue, root cause (if known), proposed solution and the status of repairs and modifications through January 2020.

Many of the identified issues are covered under the contractual warranty and have been successfully addressed. They include:

- Auxiliary Power Supply (APS), where a water intrusion issue was corrected under warranty
- Pantographs, where electrical faulting that impacted service in the tunnel was corrected under warranty
- Doors, which have failed by not retracting at times when something is in the way, have been corrected under warranty.
- Hydraulic Power Units (HPU), which control the braking, have been retrofitted with updated driver boards and wiring revisions under warranty.

The remaining major warranty repair item is the coupler between trains where the shear pins failed due to metal fatigue much earlier than allowed. A warranty fix was put in place during Spring 2019, but a new failure occurred in December. A temporary measure is in place and Siemens and the coupler supplier are initiating additional testing to validate a proposed redesign. If the testing planned for early 2020 validates the redesign proposal, warranty repairs will commence in June 2020.

SFMTA has also initiated upgrades to improve operations and maintenance and address rider comfort. Since these are modifications to the contract requirements and specifications, SFMTA is responsible for any cost differences to implement the modifications.

- Additional track brakes are being installed (\$1.75 million for phase 1) to reduce wheel flattening and the associate cost of wheel truing and reduced vehicle availability. The funding is within the existing budget due to reduced escalation costs
- Revised seat designs (\$20.2 million for phase 1 and 2 LRV4s) to accommodate rider comfort with funding coming from the existing budget due to reduced escalation costs.
- Modifications to the exterior cameras and cab monitors to address operator visibility concerns at a cost to SFMTA to be determined

The overall success of the LRV4 procurement is measured by the Mean Distance Between Failures (MDBF). Contractually, Siemens is required to demonstrate the vehicles will achieve an overall MDBF of 25,000 miles. SFMTA is targeting this to be achieved by the middle of 2020. The MDBF started at about 6,000 miles in December 2018 dropping to 4,000 in June 2019 as a result of a series of component failures. As a result of the completed and on-going warranty repairs the MDBF improved to approximately 17,000 miles in January exceeding SFMTA's projection. The daily availability of LRV4s for revenue service has also been steadily rising at a rate that is matching or exceeding SFMTA's projections. This growth is shown graphically in Exhibit 23.

To put the MDBF into perspective other transit properties in the west have been surveyed about their MDBF requirements or achievement. The MDBF varies between 9,000 and 43,000 miles which may be a result of differing definitions of chargeable failure and actual operating environments. The contractual requirement of 25,000 miles is aggressive but is based strictly on mechanical failures that are under Siemens purview. If it is not achieved, SFMTA will have increased maintenance costs and reduced number of LRVs in revenue service, thus impacting riders. The contract with Siemens does not have specific damages for not achieving the MDBF requirement but SFMTA is holding up to \$12.9 million in contract retention under the current \$344 million phase 1 contract authorization through contract modification 6, until the LRV4s meet reliability (MDBF) requirement. This retention represents 3.75 percent of the phase 1 contract value.

Key issues that need to be resolved to allow achievement of the reliability goals will be track brakes (representing a potentially significant reduction in maintenance time) and the renewed failure of the couplers that have caused early metal fatigue and failure of the shear pins. The installation of additional track brakes is well underway and should be completed in March. The couplers and shear pin issue is being analyzed and temporary warranty fixes are in place allowing two-car trains to operate a final solution has not been validated and early estimates to start repairs are June 2020.

The availability of spare parts has become a growing issue. The number and type of spare parts required in the contract was developed by SFMTA and included in the procurement documents. This part listing, however, was fairly general and was developed without experience with the Siemens vehicles. The requirement should be revisited based on the current experience of SFMTA. The intent is to develop a more specific spare parts plan, listing what is needed to avoid ordering too many spare parts or large assemblies when only specific parts may be needed on a routine basis.

The contract with Siemens calls for them to make warranty repairs at their expense including providing parts. Parts for warranty repairs are to be available at a Siemens' facility in San Francisco. In practice however it appears that warranty repair parts were taken from the assembly line in Sacramento if not otherwise available. This worked well during the early stages of assembly when parts were available but as the assembly process came to an end parts were not readily available. Siemens then utilized a practice of borrowing parts from an LRV that has not been commissioned to make warranty repairs. This practice is common in the transit industry where parts are taken from a vehicle under repair to keep other vehicles in service, it is however not common for parts to be taken from vehicles that are essentially complete and awaiting final commissioning. We are recommending this practice be changed for subsequent phases of work and dedicated warranty parts be warehoused in San Francisco.

SFMTA is eager to continue the fleet replacement program with the issuance of a Notice to Proceed (NTP) for the Phase 2 LRVs in March or April. Care should be taken that the NTP addresses all the retrofits made to the Phase 1 LRVs and incorporates planned upgrades and lessons learned from the Phase 1 procurement. Most important is the resolution of the coupler problem and assuring commercial terms are modified for Phase 2 to better assure vehicle performance and availability.

These issues are summarized in the following table.

<b>Issue</b>	<b>Repair Solution</b>	<b>Cost/Responsibility</b>	<b>Timeline</b>
1-LRV Availability	65 of 68 LRV4s commissioned. Daily availability of LRV4s in January was 43	Siemens	Commissioning of final 3 LRV4s scheduled for Spring/Summer
2-Mean Distance Between Failure (MDBF)	The aggressive 25,000 mile requirement has not been met but is increasing from 4,000 miles in July to 17,000 miles in January	Siemens	SFMTA projects 25,000 miles to be achieved in June 2020
3-Wheel Flats	Phase 1 LRV4s being retrofitted with additional set of track brakes	\$1.75 M at SFMTA cost	March 2020
4-Door Safeguards	Additional sensitive edges added to doors.	Warranty repair	Complete
5-Couplers	Second round of investigation and testing is underway. Temporary fix (shear pin replacements) in place	Warranty repair	Testing and analysis to be completed in February, with repairs starting in June
6-Pantographs	Electrical shunts added and nuts/bolts replaced	Warranty repair	Complete
7- Aux. Power Supply	Brackets modified	Warranty repair	Complete
8-Cameras	SFMTA evaluating camera and monitor size and type	\$1.6M at SFMTA cost for upgrade (estimate)	Study underway. Timing for upgrade to be determined
9-Spare Parts	Improved estimates of spare parts inventory. SFMTA and Siemens to prepare updated spare parts plan	SFMTA/Siemens	September
10-Hydraulic Power Unit	Motor-driver boards, wiring and control valves have been reengineered	Warranty repair	Complete
11-Seating	Revised seating style and height have been identified and change orders have and are being issued	\$20.2 M at SFMTA cost for upgrade (estimate)	To be determined

## Section 1. Introduction

SFCTA retained T. Y. Lin International in August 2019 to conduct program management oversight for the San Francisco Municipal Transportation Agency's (SFMTA's) Siemens Light Rail Vehicle (LRV) repairs. The oversight was intended to consider potential causes and mitigations to the range of issues including coupler shear pin failures, door opening and closing issues, and wheel flats identified during the Summer of 2019.

The T.Y. Lin International staff reviewed a substantial amount of available background material including contract documents, root cause analyses, testing and commissioning plans and reports and documentation regarding repair progress. They conducted a multi-day investigation of the current state of repairs during September 2019 in conjunction with SFMTA. A report was issued in October summarizing the issues being addressed by SFMTA and Siemens, the root cause analysis that had been previously performed for the failures and the status of repairs/modifications. Root cause analysis is an integral part of the quality process. It is a structured approach to identify the cause for a failure by looking at a range of potential causes, evaluating if they are causes or symptoms. Only when the primary cause is determined are potential fixes evaluated and implemented. The process then evaluates and monitors the fix to validate the recommended modification truly addresses the failure.

This report updates and expands on the October report giving the status of what issues have been addressed, the status of repairs at the end of January 2020 and whether the issue and repair are considered a warranty item with Siemens responsible for the cost or if the repair is considered a change or upgrade to the contract requirements with SFMTA responsible for the cost. This report also addresses additional items including spare parts availability and planned upgrades to the seating and camera/monitors. The impact of the ongoing repairs is then presented in terms of vehicle availability and Mean Distance Between Failures. Finally, recommendations are made to modify the Phase 2 procurement to incorporate the lessons learned during the start-up of the Phase 1 program.

## Section 2. Auxiliary Power Supply

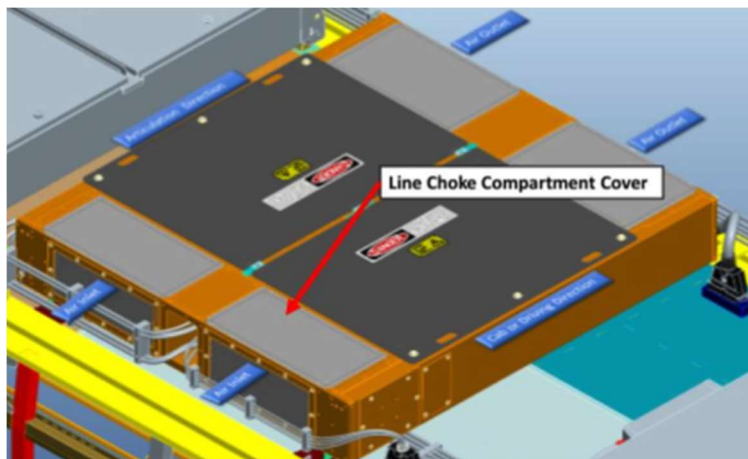
### Description

The Auxiliary Power Supply (APS) line choke compartment is located on the roof of the car and is simply a covered box within which the APS unit resides [*Exhibit 1*]. The compartment is not intended to be waterproof but is drained so as to not hold rainwater.

During the rainy season, there were a number of failures attributed to water being captured in the compartment and not draining. Water is permitted by design to enter this compartment, however without adequate drainage localized arcing occurred in the APS unit.

This impacts auxiliary power which does not directly impact safety but causes LRVs to be taken out of service thus impacting service for riders, increasing maintenance costs and impacting the MDBF.





*Exhibit 1 - Schematic of Car Roof*

### **Root Cause**

The root cause was determined to be the mounting of the APS unit. The APS unit brackets placed the bottom of the APS unit at approximately the same plane as the bottom of the compartment [*Exhibit 2*]. Therefore, water would accumulate in the compartment and not be able to get under/past the APS unit to the drain, splash into the APS and arcing would occur. The water volume, although minimal, was enough that during car movements the water would splash into the APS unit and the APS unit would fail. Note that the APS unit requires air circulation for cooling and is therefore not sealed from water.



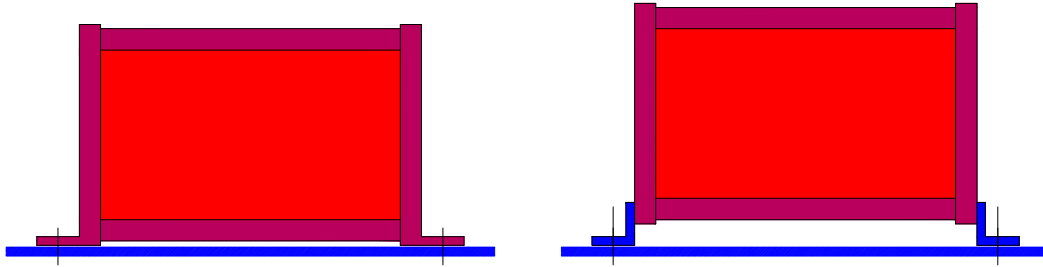
*Exhibit 2 - Old Design – Brackets at same plane as bottom of APS*



*Exhibit 3 – New Design – Brackets extend below bottom of APS for drainage clearance*

### **Solution**

In order to provide clearance for water to be drained underneath the APS, the mounting ears that were integral to the APS frame were removed and new brackets were designed and attached to the APS frame that slightly raised the APS off the floor of the APS line choke compartment [*Exhibits 3 and 4*]. The compartment provides for the additional APS height and the cover and car clearance are not impacted.



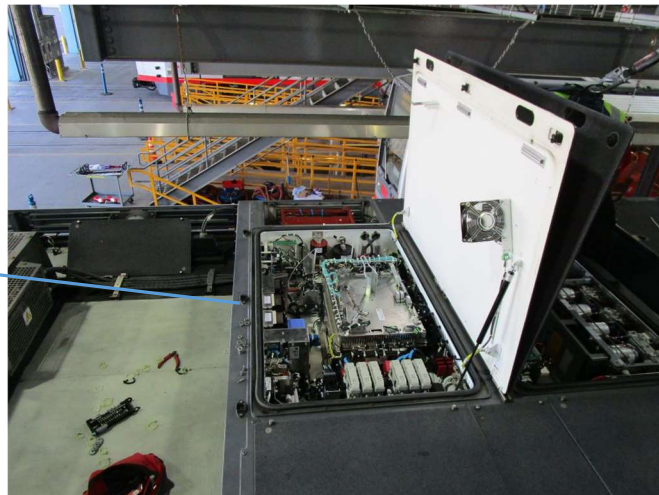
*Exhibit 4 – Old design on the left with ears integral to the frame. New design with mounting brackets separate from the frame raising the APS unit above the compartment floor for drainage clearance*

### **Status**

Once the root cause had been identified, washers were placed between the APS mounting frame ears and the compartment floors as a temporary fix to provide clearance for drainage on 100% of the cars. The permanent solution, which has been installed on all phase 1 LRV4s, is the new raised mounting brackets.

New APS units with brackets were provided and installed by Siemens under warranty at no cost to SFMTA. Exhibit 5 shows Siemens installing a new APS unit on one of the LRV4s.

Modified APS compartment on LRV roof with APS components



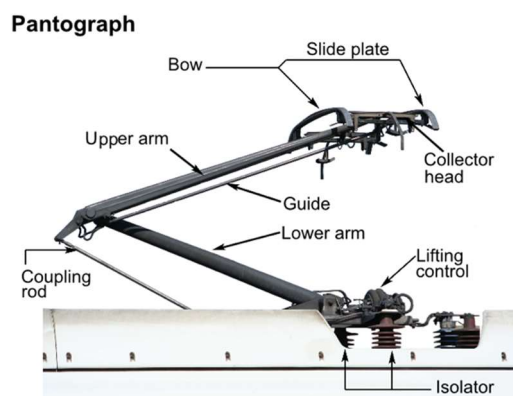
*Exhibit 5 – Installation of new APS unit in process*

## Section 3. Pantograph

### Description

The pantograph is located on the top of the car and collects power from the catenary and transmits the energy to the car and the traction motors. The design of the pantograph is such that the entire assembly is energized. Insulators or isolators between the pantograph and car roof protect the car from being energized.

A pantograph has a graphite contact shoe or slide plate in the collector or pan head that contacts the catenary current wire. The graphite conducts the power and serves as a lubricant to the catenary. It is also brittle and is the wear piece on the pantograph.



*Exhibit 6 – ICE Train Pantograph [note LRV4 cars use two double slide plates]*

The failure occurred when energy moved through the slide plate mounting bolts that were installed using Nylock nuts. The nylon on the nuts failed because they overheated from the current, which resulted in a slide plate partially separating from the pantograph frame. Because the car was in a tunnel and the pantograph collector head was only two feet above the car roof, the slide plate touched the roof of the car causing a fault.

This could impact safety and maintenance costs by potentially damaging the LRV and overhead catenary. When a failure occurs the LRV must be taken out of service thus impacting service to riders, increasing maintenance costs and impacting vehicle availability and MDBF.

### Root Cause

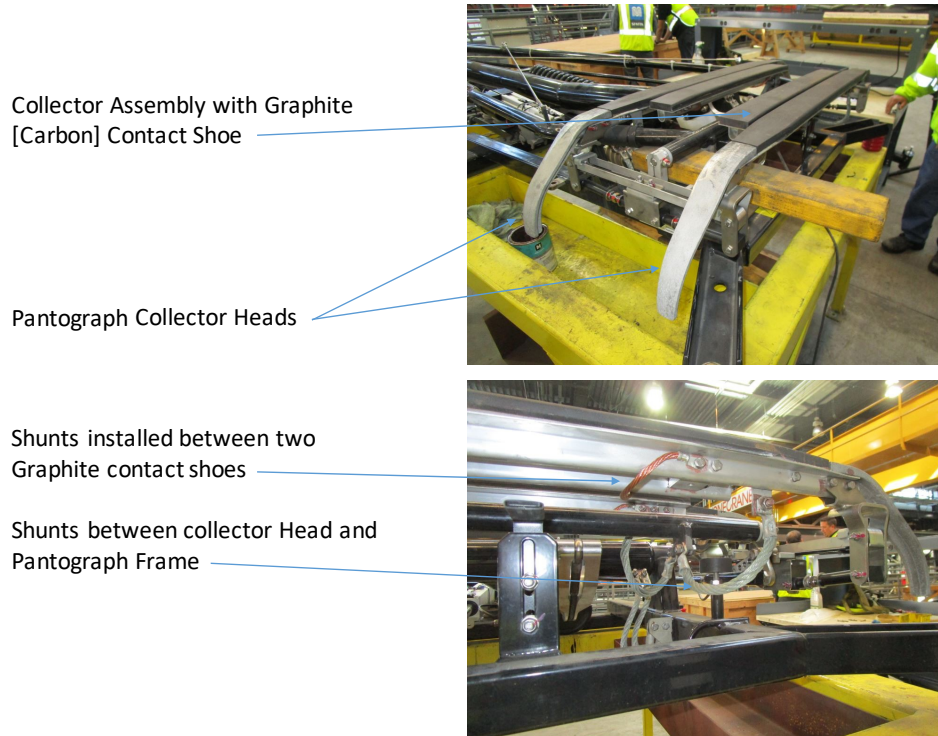
There were two root causes for this fault. First, hardware such as the Nylock nuts should not have been used in this application because the pantograph is fully charged. Second, in this application, the current should not be going through hardware but through shunts. Shunts are devices such as cables that provide a low resistance path for electric current.



*Exhibit 7 – Nylock Nuts shown on left, Nordlock Washers shown on right*

### Solution

Although there was only one such failure in the system, because of the severity of the failure and the potential to damage not only a car but also the catenary, all Nylock nuts on the pantographs were replaced with metal Nordlock washers and standard nuts. Also, eight (8) shunts were installed on each pair of collector heads to direct the path of the current from the graphite collectors and blocks through the shunts to the pantograph arms, thereby moving the current around the mounting hardware.



*Exhibit 8 – Collector Assembly with Shunts and Nordlock Washers installed*

### Status

The solution has been tested and approved by the Safety and Security Subcommittee including CPUC. All pantographs have since been modified, as a Siemens warranty repair, and the issue is closed.

## Section 4. Door Sensitive Edges

### Description

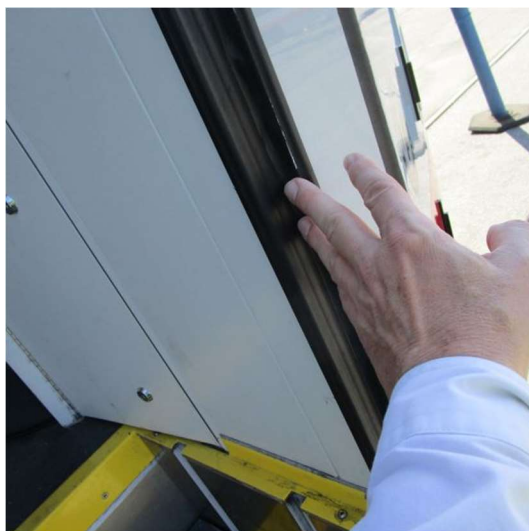
The passenger front and rear doors on the LRV4s are single leaf and plug type. They open by first moving straight out, away from the car body, and then slide open to the side of the door frame on the outside of the car body. They close in reverse to how they open.

In the original design there was one sensitive edge strip installed on the door frame that is attached to the car body [Exhibit 11]. The strip was the full height of the door. When touched by an object or person when the door is closing, the pressure on the strip signals to door to stop and reverse back to the open position.

Multiple events have been recorded where the end doors failed to retract when encountering something in the doorway. No pressure had apparently been detected by the sensitive edge strip to reverse the operation of the door. This can pose a safety issue and potential delays during service when an operator must manually clear an obstruction and close the affected door. During the repair period rear doors were locked closed thus delaying the boarding process and potentially impacting the ability to maintain schedules.

### **Root Cause**

The door design with only one sensitive edge strip left a gap at the interlock point when the door closes where an object or hand could be pinched. [*Exhibits 9 & 11*].



*Exhibit 9 – Fingers shown on door pinch point*

### **Solution**

It was determined that if additional sensitive edge strips were incorporated both in the gap where the pinch point existed and on the edge of the door [*Exhibits 10 & 12*], any object in the path of a closing door would be detected and reverse the door's operation.

The driver's control panel on the LRV4s shows the specific door that is being obstructed and the car's cameras allow the driver to see the obstruction. If the driver cannot see an obstruction via the cameras, as part of the existing procedure the driver will go to the door to see if an object is triggering the sensitive edge strips to reverse the door. If there is no obstruction and the door continues to reverse each time it closes, the driver will place the door out of service and continue on the route. The door would be checked at the end of the day during inspection at the MUNI Maintenance East facility (MME).

Note that sensitive edge strips by design have a flexible surface to allow any pressure on the surface to trigger contact between the conductive ribbons inside the strip. The strips that were specified for the LRV4s proved to be robust for the service during testing. Only one strip failed after it was purposely hit with a metal object.





Exhibit 10 – Detail of Sensitive Edge Modification

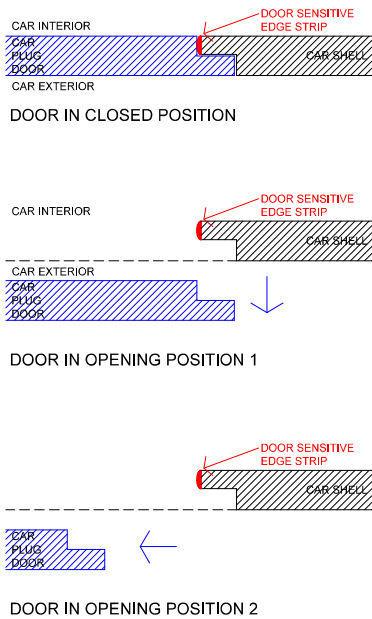


Exhibit 11 – Sketch of Original Door Design

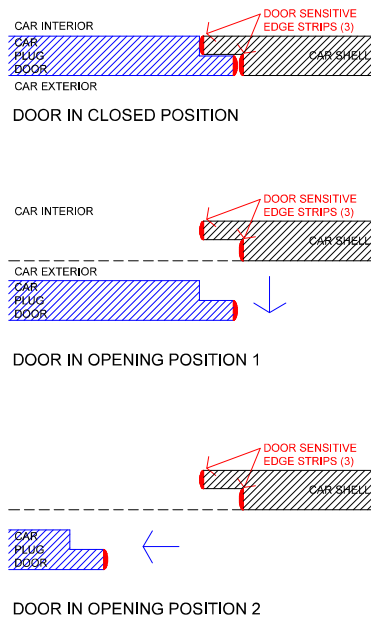


Exhibit 12 – Sketch of Modified Door Design

**Status**

All cars have now been modified with the three-strip approach as a Siemens warranty item. The fix was monitored and approved by the SFMTA Safety and Security Committee. This committee has been directly involved with overseeing the vehicle commissioning process and includes representatives from multiple SFMTA departments. The California Public Utilities Commission (CPUC) also participates in these committee meetings where the fixes are reviewed and approved through the safety certification process. The issue is now closed.

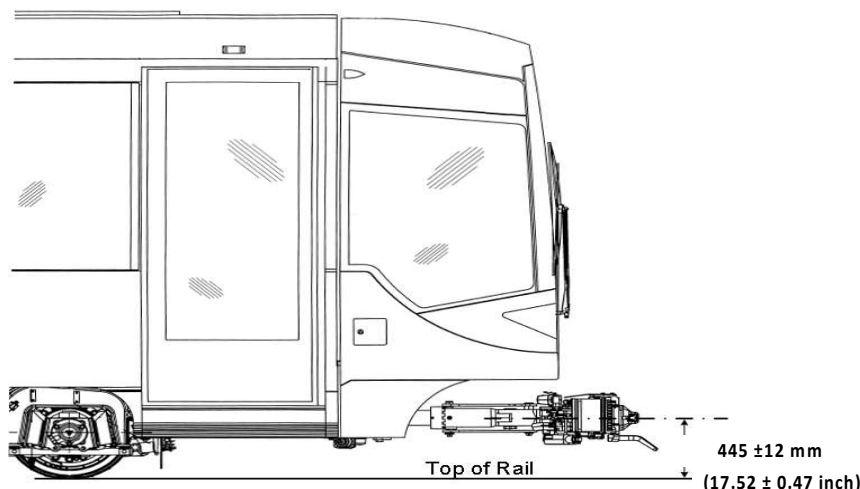
## Section 5. Coupler

### Description

The coupler assembly is designed such that the coupler face is always at the same height on the carshell. Coupler height adjustments are not required. When wheels are trued [cut] the coupler center will be lower than the required ~17.5 inches above Top of Rail. This is corrected when the wheels are reattached to the bogies and then to the carbody by means of a shimming system between the carbody and the bogie, not by adjusting the coupler. Shimming is done due to changes in wheel height to meet the required 17.5-inch clearance. Further adjustments over time due to wheel wear are accomplished with an adjusting screw (see exhibit 15). Note that this shimming also corrects the height of the car floor and steps so that the steps and door match the required heights at the platforms.

There are adjustment bolts for the coupler inclination. The coupler must be level to the track to perform properly. Exhibit 13 shows the maintenance instruction for adjusting the couplers.

2.5 Coupler Adjustments



Note:	Use VOITH <i>User Manual- Scharfenberg Coupler 330.470_Draft.pdf</i> .	A-Cab	B-Cab
Action:	Perform section 5.12 Checking and adjusting the projection of the electric heads.		
Result:	Electric heads are properly adjusted per section 5.12.	_____	_____
Action:	Perform section 5.13 Adjusting the inclination of the coupler (Vertical).		
Result:	Coupler vertical adjustment performed per section 5.13 and graphic above. Height is 445 ± 12 mm (17.52 ± 0.47 inch) above top of rail. Coupler vertical height is parallel to top of rail with the smallest inclination angle of -0.5 degrees and the largest inclination angle of 0 degrees.	RAV _____	_____
Note:	Account for wheel wear when measuring vertical height.	_____	_____
Action:	Perform section 5.14 Centering of the coupler (Horizontal).		
	Coupler horizontal adjustment performed per section 5.14.	_____	_____

*Exhibit 13 – SII-MTA-1021A SMI-OSAT-SFMTA Mechanical Adjustment Rev 1\_3, Pg. 9*

This is a safety issue that could in an extreme event could allow 2-car trains to separate, although should this rare event occur, other parts would immediately stop each car. During the interim fix only single car trains were operated thus reducing capacity for riders in addition to impacting maintenance cost and indirectly MDBF by reducing the number of miles traveled by each car.

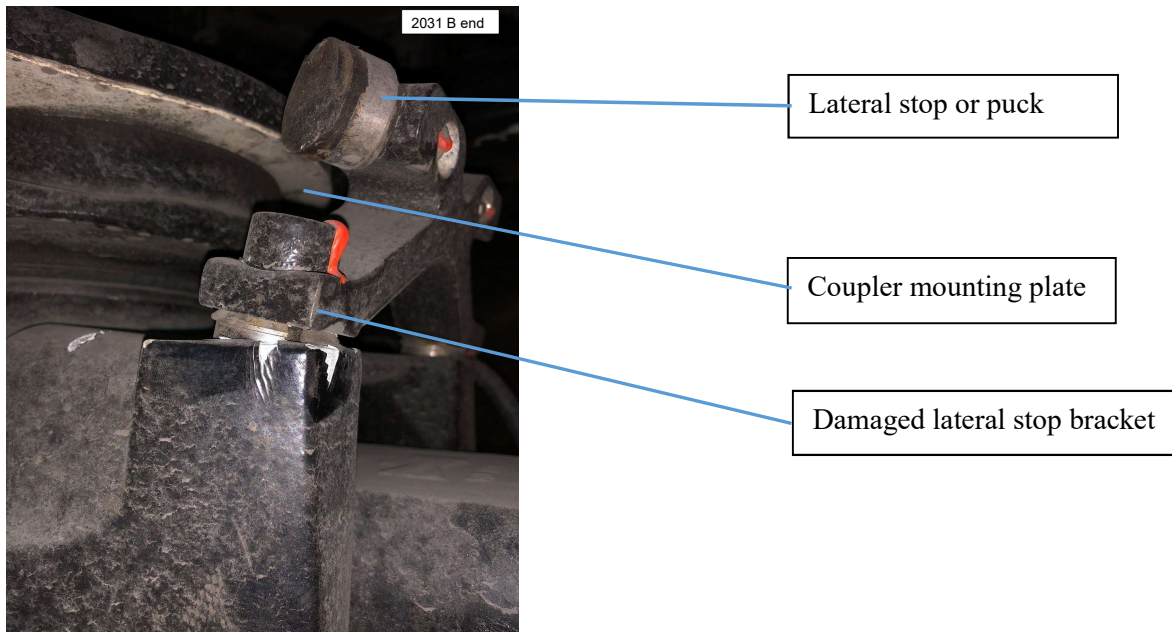
When a two car consist was going through the Judah/La Playa/Ocean Beach turnaround in April 2019, the shear pin on the paired couplers broke. The shear pins (two per coupler) are designed to break when forces exceeding allowable limits occur, such as in a collision, and are intended to be a

sacrificial element to both protect the rest of the car and allow the couplers to fold into the car thereby placing the anti-climbers, located on the face of the car above the couplers, in a position to stop the obstruction the car hit from climbing up and into the car driver/passenger compartment.

### Root Cause

A root cause analysis of the failure was performed by Siemens and SFMTA when the issue surfaced. Several parts were damaged as a result of this incident, but because the cars had not hit any obstruction, the root cause could not be determined without further evaluation of all components within the assembly that were damaged as well as revisiting the assembly design and design parameters. Therefore, the shear pins, bearing housing, lateral stops, support springs, bearing brackets and other components were all inspected and tested including metallurgical testing of the shear pins. The track alignment design parameters were also all checked to determine if the coupler assembly design for maximum coupler horizontal swing angle had been exceeded. The testing and studies determined that all components performed as designed and that the maximum horizontal swing angle of the coupler could not be exceeded on the SFMTA track alignment including at all turnarounds. This indicated the shear pins should not have failed, due to sharp curves, within the SFMTA operating parameters.

The only unusual variable that appeared in the inspections is that the lateral stop bracket, which limits the coupler horizontal swing during maintenance had been damaged and partially detached [Exh. 14]



*Exhibit 14 – Lateral Stop and Upper Clam Shell Damage*

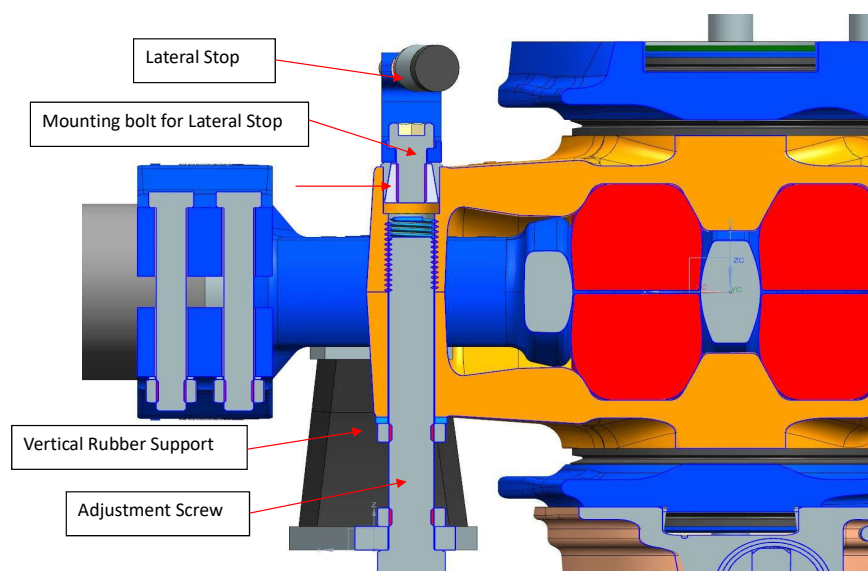
Exhibit 14 also shows that the rubber piece on the stop, which is called a puck, is larger than the lateral stop bracket and is at the height of the coupler mounting plate. Note also that the coupler mounting plate, which is part of the car not the coupler, extends beyond the coupler assembly, which mounts to the plate.

Testing revealed that when a coupler assembly with an undamaged lateral stop bracket is pushed to the maximum horizontal limit, the stop engages the clamshell and swings approximately 2 mm under

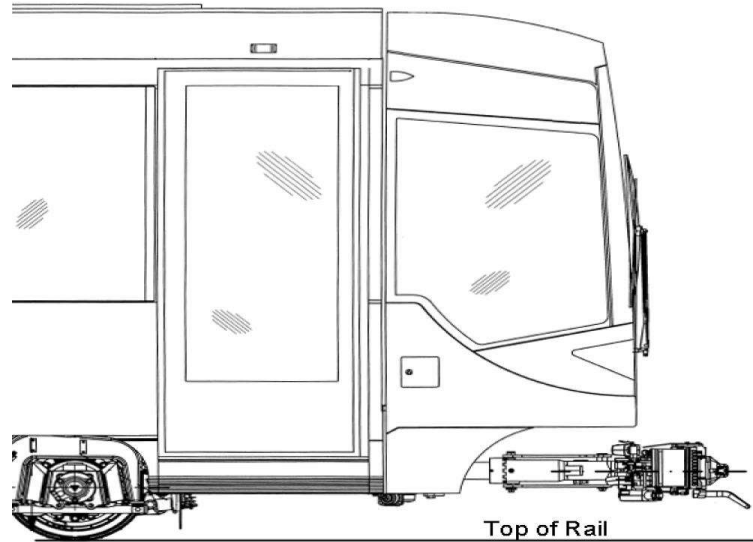


the coupler mounting plate as designed. Testing also revealed that if the lateral stop bracket puck hit the coupler mounting plate, it would do so within the maximum horizontal swing limits of the coupler. Therefore, it was determined that the cause for the shear bolts to break was the coupler swing was impeded by the stop bracket puck hitting the coupler mounting plate.

Further investigation into the engineering of the stop bracket mounting determined that the mounting bolt for the lateral stop bracket and the adjusting bolts for the coupler inclination occupied the same hole. If the coupler adjustment bolt was over tightened, compressing the rubber vertical support, the bolt would push the mounting bolt for the stop bracket out. With only 2mm clearance available between the puck and the coupler mounting plate, this was determined to be the root cause for the failure of the coupler.



*Exhibit 15 – Cross Section through Coupler Bearing Housing*



<p>Note: Use VOITH <i>User Manual- Scharfenberg Coupler 330.470V1.pdf</i>.</p> <p>Action: Perform section 5.12 Checking and adjusting the projection of the electric heads.</p> <p>Result: Electric heads are properly adjusted per section 5.12.</p> <p>Action: Perform section 5.13 Adjusting the inclination of the coupler (Vertical).</p> <p>Result: Coupler is parallel to the track with the smallest inclination angle of -0.5 degrees and the largest inclination angle of 0 degrees.</p> <p>Action: Perform section 5.14 Centering of the coupler (Horizontal).</p> <p>Result: Coupler horizontal adjustment performed per section 5.14.</p>	<p>A-Cab</p> <p>_____</p> <p>B-Cab</p> <p>_____</p> <p>_____</p> <p>_____</p>
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*Exhibit 16 - SII-MTA-1090A SMI-OSAT-SFMTA Mechanical Adjustment Rev 1\_6, Pg 9*

**Solution**

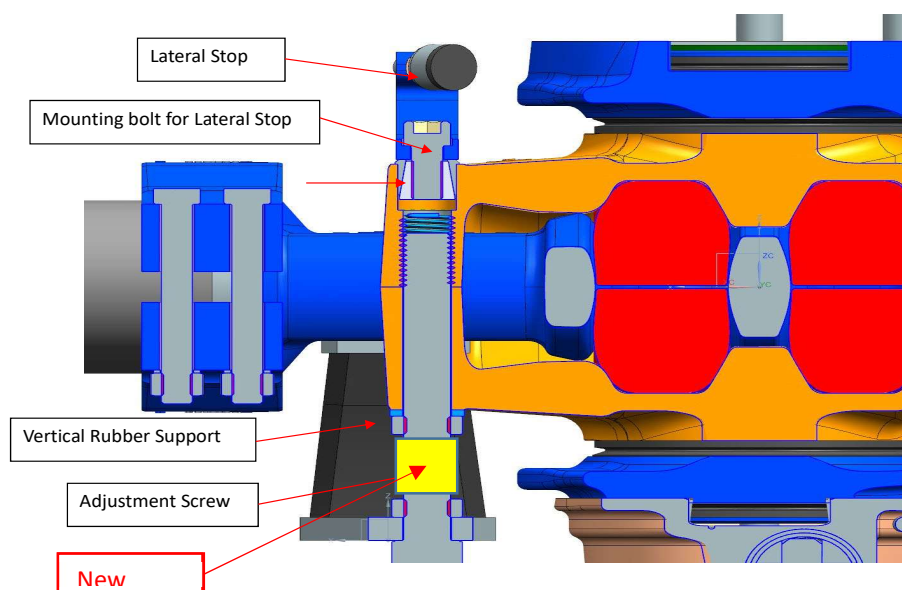
First it was determined that the maintenance instruction suggested that the height on the coupler needed to be adjusted. The only method available to the maintenance worker to adjust the coupler height was the adjustment screw for coupler inclination. Unfortunately, the screw was being over tightened. This necessitated a revision to the maintenance instructions [*Exhibit 16*] where the instructions did not require the coupler height to be adjusted or provide a coupler height requirement and reference instructions to adjust the coupler height.

Second, the 2mm clearance between the lateral stop bracket puck and the coupler mounting plate was deemed insufficient. Therefore, because the stop bracket is only a bump stop to keep the coupler from damaging car underframe parts when a maintenance worker swings the coupler out of the way for servicing the car, a smaller diameter replacement puck that would not extend beyond the height of the lateral stop bracket would be adequate [*Exhibit 17*]. This would increase the clearance between the puck and the mounting plate to 7mm.



*Exhibit 17 – Lateral Stop Bracket Puck Extends 5MM above Bracket*

Third, in order to prevent the adjustment screw from being over tightened due to, for example, not coupler height but wear of the rubber support, a sleeve spacer was installed on the Adjustment Screw to prevent the Adjustment Screw from being tightened such that it engages and pushes the mounting bolt for the lateral stop out of the clamshell [Exhibit 18].



*Exhibit 18 – Cross Section through Coupler Bearing Housing with Proposed Sleeve*

### **Status**

Although there was only one failure, a total of 31 of 116 couplers showed signs of contact at the lateral stop and damage to the upper clam shell. All coupler assemblies have now been inspected and damaged parts replaced. And all shear pins and support springs have been replaced. A new smaller puck design and sleeve was installed and tested on a LRV4 and a Field Modification Instruction

(FMI) was developed, and a field modification on all LRV4s was initiated. This work was completed as a warranty repair by Siemens and was expected to fully address the coupler issue.

In December 2019 the coupler issue reoccurred. An operator noticed an unusual circumstance similar to being rear-ended. The passengers were off-loaded, and the two-car train was taken out of service and thoroughly inspected in the yard. Inspection revealed broken shear pins in both cars and Siemens was notified immediately. The Siemens' project team elevated the issue within their organization and to the CEO level of the coupler supplier, Voith Turbo Inc. One-car trains were then run until shear pins could be replaced.

Siemens and Voith have identified some potential causes of the new failure and potential design solutions to the unusual metal fatigue issue. They have fully instrumented LRV4s to validate their assumptions and tested the train on multiple locations within the SFMTA system. A formal report including recommended corrective actions is expected to be available by the end of February. Voith committed to recommending a corrective design ready for validation by March 12, 2020. Assuming successful validation materials they committed to having parts shipped and ready for installation on the entire LRV4 fleet by June 12, 2020.

Based on the current circumstances both a short term and long-term validation are being recommended. The long-term validation will include regular shear pin condition assessments over at least a 12-month period. During the interim Siemens has issued a letter to SFMTA indicating the new shear pins (same design as originally provided) can operate in coupled cars for at least 90 days. Siemens and Voith have agreed to provide all additional shear pins as required as a warranty item at no cost to SFMTA.

SFCTA staff and consultants will participate in reviews of the design alternatives, validation of data and proposed retrofits. Additionally, the SFMTA Safety Committee including a CPUC representative will need to approve the changes as part of an updated Safety Certification. Analysis and repairs are being completed as a warranty item with Siemens and its supplier responsible for all costs.

## **Section 6. Wheel Flat Spots**

### **Description**

Flat spotting of wheels occurs when the wheels lock or stop rotating and are dragged during braking until the car stops. This can be the result of either emergency braking or a slippery track. The friction between the rail and wheels while the wheels are locked creates localized heating, which changes the alloy structure of the wheels and results in premature wear. Flat spots can be removed by wheel truing. This places additional stress on the cutters of the wheel truing machine and the cutters typically need to be replaced after cutting a single flat spot wheel. Cutting carbide tips typically last through numerous cutting operations on non-flat spot wheels. Note that flat spots in extreme cases, left untreated can damage rails and cause a derailment.

The old Breda cars and the new Siemens LRV4 cars have similarly positioned braking controls although the effects of the controls are slightly different. The 'T' handle controller on both cars accelerates and stops the cars [*Exhibit 19*]. For an emergency stop the Breda 'T' handle is pulled straight back and twisted 90 degrees. The Siemens 'T' handle is just pulled straight back but not twisted.



*Exhibit 19 – LRV4 ‘T’ Handle in 90 Degree Off Position*



*Exhibit 20 – LRV4 Emergency Red Stop Button*

The emergency stop button (referred to as the “mushroom”) on both cars is in the same position and when hit, puts the car into emergency stop mode [*Exhibit 20*]

Wheel flats are not a safety issue, but increase maintenance costs and reduce vehicle availability. The braking system on the LRV4s includes three components: dynamic brakes, friction brakes and track brakes. The vehicles were thoroughly tested under varying load, alignment and weather conditions in San Francisco with the originally specified brake configuration prior to final safety certification and commissioning. The additional track brakes are not required to meet the contractual braking requirements but will reduce maintenance costs and improve vehicle availability.

### **Root Cause**

The first difference between the two designs has to do with reaction time of the driver. It’s simply faster to hit the emergency stop button on the Breda car than pull back and twist the ‘T’ handle. In the LRV4 design the time to pull the ‘T’ handle back or hit the emergency stop button is understood to be the same.

The second difference between the two designs is the braking. In emergency braking on the Breda cars, the wheels do not lock up. In emergency braking on the LRV4 cars using the 'T' handle, the wheels also do not lock up. But, in emergency braking on the LRV4 cars using the emergency stop button, the wheels do lock up causing flat wheels.

Because of an incident several years ago in a Breda car that resulted in a fatality, the drivers have all been trained when in an emergency to always hit the emergency button. Unfortunately, in the SFMTA's operating environment, with substantial in-street running, emergency stops are a regular, sometimes daily event. Hitting the stop button has become part of the driver's muscle memory.

In order to not flat spot the wheels on the LRV4 cars, it has been suggested to retrain the drivers to use the 'T' stick in emergency situations. Because drivers may operate either the Breda cars or LRV4 cars, changing the muscle memory of the drivers for the LRV4 cars is not recommended. If an emergency situation were to present itself in a Breda car where the driver's muscle memory is attuned to the LRV4 cars, another unfortunate incident may occur.

Simply, although the cost of flat spot wheels to SFMTA is substantial, another fatality would be unacceptable.

### **Solution**

The LRV4 cars are equipped with both hydraulic friction brake systems on the wheels and with electro-magnetic track brakes on the center bogie. The track brakes engage the track to stop the car.



*Exhibit 21 – LRV4 Single Car at MME*

The combination of the wheel brakes and track brakes stops an LRV4 within the required distances and speeds without damage to the LRV or track structure. This requires that additional pressure be applied by the wheel's brakes and therein we get wheel lock. It was determined that if less pressure were applied to the wheel's brakes, such that they would not lock up, and more pressure were applied by track brakes, such that the car would still stop within the required distances, additional track brakes would need to be installed on the end bogies. This would not damage either the LRV or track structure.

An LRV4 car has been equipped with the additional track brakes and tested on the SFMTA alignment. There were 500 emergency stops using the emergency stop button performed during the test resulting in flat spot wheels in only two stops. This compares to almost 100% of the wheels being flat spotted with the present single bogie track brakes when the emergency stop button is applied.

The total time and labor to true a single car is approximately 2.5 days. Because many of the cars operate in two car consists, when an LRV4 emergency stop button is applied, all 24 wheels are impacted, doubling the maintenance effort and cost to get the cars back in service. Note that labor costs greatly outweigh the other costs. After wheels have been trued a number of times the wheels become too small and must be replaced entirely. This process can take up to a month to complete.

### **Status**

Installation is in progress (51 vehicles have been completed) and will be completed in March 2020. Funding for this upgrade is SFMTA's responsibility and was included in contract modifications 5 and 6, which were approved by the SFMTA Board in October and November. Funding for the modification was obtained due to cost savings within the existing not-to-exceed budget. The funding availability resulted from a lower cost escalation rate than was assumed in the original contract.

The overall cost including proposed contract modification 7 (to the SFMTA Board in February/March) is estimated to be \$4.7 million which includes \$1.75 million for phase 1, which was approved in contract modifications 5 and 6. The cost justification appears clear. When a car flat spots the wheels, all 12 wheels need to be trued, the car needs to be shimmed and the coupler inclination adjusted. The wheel life is reduced and the cutters on the wheel lathe will need to be replaced after each set of flat spot wheels are trued. Because the wheel lathe is presently in constant use due to flat spot wheels, this also impacts the machine's maintenance requirements and life cycle.

## **Section 7. Hydraulic Power Unit**

### **Description**

The Hydraulic Power Unit assembly supports the hydraulic friction brakes on the car wheels. HPU failures are a major service availability issue as they fail in a safe mode keeping the brakes applied. The criticality of correcting this issue was significant. The high failure rate also contributed to a reduction in MDBF and vehicle availability.

### **Root Cause**

Three potential root causes were identified; the motor driver board, the wiring harness and the brake control valve. Further investigation led to determining all three were part of the cause with the motor driver board being the primary factor

### **Solution**

Siemens reengineered the motor driver boards, wiring harness, control valve and issued a Field Modification Instruction.

### **Status**

All LRV4s have been retrofitted with the new motor driver boards, wiring harnesses and control valves. All work is covered by the Siemens warranty.

## Section 8. Cameras and Monitors

### Description

LRV4s are equipped with cameras mounted on the outside of the vehicles that transmit video to a monitor in the cab car along with a video recorder. This is different from the existing Breda fleet which utilizes outside mirrors. Both systems are used by transit properties across the country using both exclusive and non-exclusive right of way. The dynamic envelope of the LRV4s combined with the geometrics of the track and the proximity of physical obstructions adjacent to the trackway preclude retrofitting the LRV4s with outside mirrors. The cameras also provide views from the front and rear of the train, which will be more important as SFMTA introduces longer 3-car trains.

After the approval by the SFMTA Safety and Security Committee and the CPUC, SFMTA operators expressed concerns related to being able to see if pedestrians are too close to the cars or on the yellow safety markers adjacent to the car boarding position. Concern was also expressed regarding the size of the monitor in the cab and the quality of the image, particularly when the LRV travels between light and dark areas such as when an LRV enters or exits a tunnel. The current camera system was reviewed by operators, SFMTA Safety and Training, Training Department, and CPUC staff and determined to provide acceptable views for the length of a two-car consist. The system has now been approved by the SFMTA Safety and Security Committee and the CPUC. It is therefore not considered a safety issue at this time and does not impact vehicle availability or MDBF. A demonstration program later this year is proposed for three-car consists, which will be reviewed and approved by the SFMTA Safety Committee prior to being put into service.

SFMTA staff is concerned about the issues raised by the train operators and is considering potential modification to the cameras and monitors. Staff, including operators and union representatives, is working with Siemens to evaluate potential modifications including larger cameras to expand the views and larger or multiple monitors on each side of the cab.

### Status

This is currently a work in progress. Staff has recently visited the Siemens plant in Sacramento where they were able to observe cameras and monitors on LRVs being used by other transit properties. They have also uncovered previously unknown issues, such as an operator not being able to see objects in a proposed monitor replacement due to the polarization on their sunglasses. Staff is working towards identifying appropriate modifications during the first half of 2020, to allow incorporation into the phase 2 vehicles and retrofit of the phase 1 vehicles. Alternative monitor concepts were viewed in the SFMTA yard by a committee of program management staff, operators and union representatives in late January. A concept was agreed to and Siemens is developing a prototype that can be mounted on an LRV4 for testing later this Spring.

It is anticipated that these potential changes from the contract specifications and safety certified conditions will be an upgrade with SFMTA bearing the cost responsibility.

## Section 9. Seats

### Description

The LRV4s are equipped with flat seats as opposed to the current Breda seats that have individual indentations. The longitudinal flat seats allow riders to slide when the LRVs start-up or stop. The seat height is also higher than the Breda cars. MUNI riders have requested, as a matter of comfort, that all LRV4 seats be replaced with seats with design and height similar to those in the Breda



vehicles. This is not considered a safety issue and does not directly impact vehicle availability or MDBF.

### **Status**

This change is being considered and funding (\$1.57 million) was provided in contract modification 6 to initiate the design process to add depressions to the seats and adjust height. An estimated additional \$18.6 million is being contemplated in future contract modification 7 to cover the cost of revised seats for both the phase 2 vehicles and retrofit of phase 1 vehicles. It is anticipated that this potential change will be an upgrade with SFMTA bearing the cost responsibility.

## **Section 10. Other Items**

### **Description**

During the course of our oversight, several other items have been identified that may impact the availability or reliability of the LRV4 fleet. These items have not risen to the same level as the previously discussed issues. These items are being addressed by SFMTA and Siemens on an on-going basis. The items are noted below along with their status and an informational item.

- CCTV Failure – The CCTV have intermittently failed to record data. This appears to be a software integration problem. Siemens is currently testing a software modification to resolve the issue of communication between the vehicle and the SFMTA specified camera system.
- Door Adjustments – Siemens has adjusted the doors on five test vehicles to reduce opening/closing issues. These are currently being tested and no issues have been observed. If the testing is completed without issues the remaining LRV4 fleet will have their doors adjusted and the SFMTA mechanics will be trained not to make additional adjustments as they are required to do on the existing Breda fleet.
- Brake Control Unit – Several LRV4s have experience brake locking that may be caused by the brake control unit. SFMTA and Siemens are currently evaluating these incidents to determine if they are unique events or a potential fleet failure issue. This analysis and any required repairs will be completed as warranty items by Siemens.

## **Section 11. Mean Distance Between Failures**

### **Description**

The Mean Distance Between Failures (MDBF) is a means to evaluate the effectiveness of a transit property's maintenance practices over time. With new vehicles it can also be a means of tracking manufacturing quality.

The MDBF calculations depend on two factors, mileage traveled and recorded failures. Siemens is contractually required to provide an MDBF of 25,000 miles. And yet, the MDBF for the LRV4s at the start of service was approximately 5,000 miles. By January 2020 the MDBF had improved to approximately 17,000 miles [*Exhibit 22*]. By comparison, the current Breda fleet had an MDBF of 3,300 in FY 2003, which dropped to under 2,000 miles in FY 2005. Ultimately the MDBF increased to a high of 5,500 miles in FY 2006. The calculation of MDBF for the existing Breda fleet is based on a different assumption regarding chargeable failures. The Breda calculation includes many non-mechanical failures including (train control, operator caused, customer caused) that are beyond the control of Siemens and therefore not included in the LRV4 MDBF calculation requirements.

The MDBF trend for the LRV4s is calculated on a monthly basis by Siemens and reviewed by SFMTA staff and their Failure Management Board. This information is reviewed to identify trends and any particular causes for changes. For example, the MDBF was positive at the end of 2018, but in February of 2019 then took a negative hit for the APS faults. It was the rainy season and a number of APS units failed from excess water in the APS Line Choke Compartment. This also impacted availability and mileage as all car APS units needed to be modified with the temporary solution. Once corrected the trend was again positive. In May the MDBF took another negative hit for both the couplers and the doors. And even though there was only one recorded failure for each, the repairs were required on all cars, which impacted availability and mileage. The continued flat spotting of the wheels is not considered a failure, but it does impact MDBF in that it impacts the availability and mileage put on the LRV4 cars.

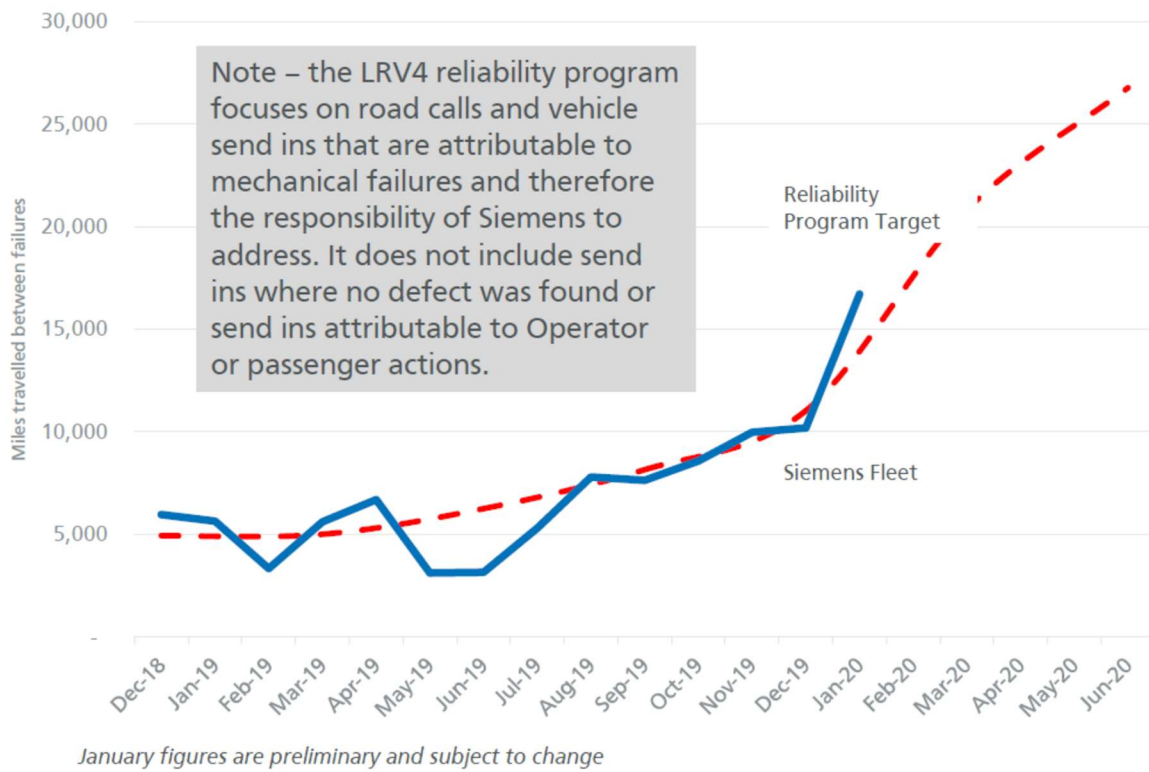


Exhibit 22 - LRV4 Projected MDBTF

The MDBF improvement also contributes to the increased availability of LRV4s for revenue service. Exhibit 23 shows the daily availability of LRV4s over time. This accounts for delivery of vehicles and availability due to planned and unplanned maintenance activities.

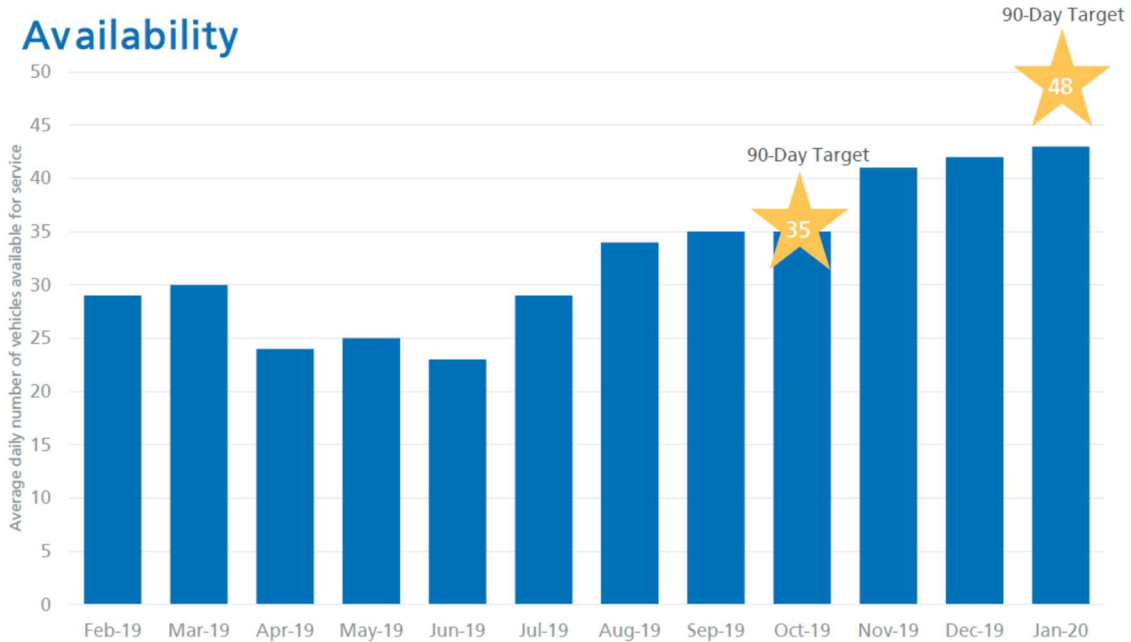


Exhibit 23 – LRV4 Daily Availability

The contract with Siemens specifies the allowable mean distance or times between failures by system type and then summarizes this by requiring Siemens to demonstrate the combination of all systems failure modes to result in Mean Distance Between Train Delays of 25,000 miles (contract volume 2, section 2.8.1)

This is clearly a contractual requirement, however, some people have expressed concerns that it may not be achievable. While each transit property collects data differently and operates under different operational conditions it is useful to see what other transit properties use to benchmark their systems.

The following table notes the MDBF, either actual or planned for various light rail systems.

Transit Property	MDBF	Actual or Planned	Source
Sound Transit, Seattle WA	20,000	Planned	Design Criteria Manual, Rev 5, 2018
TriMet, Portland OR	12,000	Actual	2018 quarterly performance report
Santa Clara VTA	25,000 43,951	Planned 2019 Actual	FY 20/21 Adopted Biennial Budget
Los Angeles Metro	20,000	Operational Target	Personal communication
San Diego MTS	9,239	2018 Actual	FY 2016-2018 Triennial Performance Audit of MTS
Houston Metro	20,027	FY 2018 Actual	2018 Monthly performance report

The above table represents a range of transit environments and importantly different definitions of chargeable incidents. The Siemens contract requirement of 25,000 miles is based strictly on mechanical failures and not other types of failures (train control system, operator caused, customer caused) that SFMTA includes in their own MDBF calculations for the existing Breda fleet.

The contract with Siemens identifies the MDBF requirement, as a means of determining expected quality. There, however, does not appear to be any time frame for achieving this. The monetary incentive for Siemens is the contract closeout when SFMTA releases the final contract payment including up to \$12.9 million in contract retention. If the MDBF requirement is not met, SFMTA will be performing more frequent maintenance resulting in higher labor and parts costs than if the LRV4s met the 25,000-mile MDBF specification. Failing to meet the MDBF requirement may also reduce the vehicle availability potentially impacting ridership. SFMTA should consider tightening this requirement as they move forward with the phase 2 vehicle order to add specific time frames for achieving the requirement and penalty if it is not achieved. Penalties could include retaining a greater amount of phase 2 payments if not achieved by a certain time. Alternatively, SFCTA would withhold all or a portion of the phase 2 funding until the requirement is met.

## **Section 12. Spare Parts**

### **Description**

The LRV4s have experienced a notable shortage of spare parts. During the initial phases of vehicle delivery, Siemens appeared to provide warranty parts taken directly from their assembly lines. This did not pose substantive problems until the production was reaching a close and parts from the assembly line were no longer readily available.

When parts were not readily available, Siemens utilized a common practice with transit agencies of borrowing parts from one or more vehicles that were not in service to keep more vehicles in service. This practice is similar to what is labeled “Hangar Queens” in the aircraft industry. This practice while common in the transit industry is typically found in mature fleets where parts may be borrowed from other vehicles under repair and not otherwise available for revenue service as opposed to new vehicles that are awaiting commissioning and final payment.

The contract includes a specific spare parts list. The list however was developed during the procurement period and according to SFMTA staff was very generalized since SFMTA had no experience with the Siemens vehicles and did not want to order parts that would not be needed for years causing storage problems at the Muni maintenance facility and adding to the overall program cost.

### **Status**

Siemens has borrowed parts from an LRV4 that was essentially complete but had not been commissioned and was still under Siemens ownership. Over the past year as the LRV4s are being rolled out into revenue service, SFMTA is gaining a better understanding of what and how many spare parts are required to keep the entire fleet available for revenue service.

Our review of the contractual requirements suggests some refinements to the contractual approach may be appropriate to maintain an appropriately sized parts inventory and to obtain reasonably priced parts. Specifically:

1. The contract calls for large assemblies when specific parts may be more appropriate. Our experience is other transit properties have more extensive and specific spare parts

- requirements in their procurement documents. Having SFMTA maintenance staff work with Siemens and their parts catalog, using the lessons learned from phase 1, to develop a more refined list of needed parts and the number of those parts to be included with the phase 2 vehicle acquisition could provide a more efficient and cost-effective process.
2. It is not clear how SFMTA plans to repair and overhaul components. Many transit properties use unit exchange (UTEX) or Repair and Return (R&R) processes with rebuild or maintenance repair kits in some areas and UTEX/R&R on other components. Maintenance, rebuild and repair kits are far cheaper than buying complete assemblies that may either sit on the shelf for years or be cannibalized for parts.
  3. SFMTA has approved major suppliers for the LRV4s. Siemens is a builder not an operator/maintainer and it is a lot easier for them to sell complete assemblies whenever available instead of piece parts. SFMTA should consider working with the major suppliers to obtain specific parts to speed delivery and reduce markups. This requires a mature maintenance organization such as SFMTA, but it allows procurement of individual parts or larger assemblies that are closer attuned to SFMTA maintenance capabilities.
  4. A year of operations has provided some experience to draw from to refine the spare parts requirements. As more experience is gained SFMTA should provide opportunities to modify the spare parts list at various times during the Phase 2 procurement. SFMTA should also monitor the warranty parts inventory so it is available throughout the production and warranty period and does not specifically rely on parts from the assembly line.

## Section 13. Contract Modifications

### Description

The SFMTA Board has approved six contract modifications to date incorporating multiple changes to the contract both in terms of numbers of vehicles provided and changes to the vehicle itself. The changes to the vehicles can generally be classified as follows:

- Operations improvements are intended for the driver or operator of the car
- Maintenance improvements are for maintainability, accessibility and availability. The goal is reduced dwell times and unscheduled maintenance that will be captured in improved MDBF
- Passenger improvements are primarily for comfort and visual controls
- Safety improvements, and there is only one, for a dead man switch

A summary of the key components of each contract modification is as follows:

Modification	Date	Scope	Value
Initial NTP	9/30/14	Initial order for 24 LRVs plus associated spare parts and training	\$146 M
Mod 1	3/15/15	increase the number of Phase 1 vehicles from the initial 24 to a total of 64 plus added spare parts.	\$147 M
Mod 2	10/30/15	Approved the list of major suppliers, clarified the purpose for the contract Allowance and modified the payment structure	\$0
Mod 3	8/16/16	Approved an updated list of major suppliers, modified the radio/CAD/AVL systems on the vehicles and modified the vehicle and documentation delivery schedules	\$20 M
Mod 4	7/11/17	Added 4 additional LRV4s increasing the total to 68.	\$16 M
Mod 5	10/22/19	Approved partial funding for additional track brakes.	\$0.5 M
Mod 6	11/5/19	Approved additional funding for track brakes, initial funding to initiate the redesign of the seating and other minor modifications to the LRV4s. This also includes a provision to plan for the acceleration of the delivery schedule for the phase 2 (replacement) vehicles by 14 to 16 months at an initial cost of \$5.6 M	\$10 M

The source of funding for each modification was not included in the modification discussion but according to SFMTA staff the total amount of the contract including expansion vehicles and option vehicles is still within the not-to-exceed contract amount due to the lower than expected rate of escalation. The escalation cost savings have thus become a de facto contingency fund.

A proposed contract modification 7 is in process. The major items planned for this modification include fully funding the track brakes and seating modifications for both phase 1 and 2 vehicles, modification to the cameras/monitors (potentially deferred pending results of testing), providing additional training and other minor vehicle modifications. For an estimated amount of \$30 M. Additionally, Mod 7 also completes the funding for accelerating vehicle production at an additional cost of \$21 M bringing the total acceleration cost to \$26.7 M. The acceleration will be accomplished by adding a second production line to be used. This will allow the existing Breda fleet to be replace 14 to 16 months earlier than planned.

The original schedule was based on SFMTA's anticipated time to commission vehicles. They have found they are able to commission more vehicles concurrently allowing for the faster vehicle production.

SFMTA has a continuing concern regarding the viability and maintainability of the current Breda fleet. The Breda vehicles are at the end of their useful life, requires substantial maintenance to keep them in service and importantly SFMTA is finding it more and more difficult to obtain parts. Some of the suppliers have gone out of business which is further exacerbating the maintenance issues

## Recommendations

SFMTA's acquisition of a new LRV fleet from Siemens Industry is an important step to improving transit reliability in San Francisco. The project has benefited from the very competitive pricing received in the 2014 bids, the relatively flat rise in inflation which has saved in the price escalation clauses in the contract and the location of the manufacturing facility located 2-hours from the City which has allowed ready access to the plant and Siemens staff.

The overall process, however, has not been without its difficulties. There have been some notable vehicle failures discussed above. The LRV4s are different from the existing Breda fleet, which poses transitional issues for LRV operators, particularly those that operate in a Breda car one day and a Siemens car the next day. Spare parts have not been readily available towards the end of the procurement leading to delays the delivery of the final two vehicles.

As SFMTA moves towards issuing a Notice to Proceed for the Phase 2, 151-vehicle replacement fleet we recommend:

1. All issues with the phase 1 LRVs be resolved with repair strategies in place and repairs completed on a sufficient number of vehicles to determine the issue is satisfactorily addressed.
2. Lessons learned from the phase 1 procurement be gathered from all parties involved with the new vehicles including SFMTA program staff, Siemens and their key suppliers, funding partners, operators, maintainers and riders. These lessons can then be used to modify the procurement documents for the phase 2 LRVs
3. SFMTA schedule a Design Review of the Phase 2 LRV4s prior to issuing a planned Notice to Proceed (NTP) for the phase 2 LRV4s to verify that the improvements and warranty fixes are captured in the remaining vehicle order.
4. The contract be amended to clarify MDBF attainment and clarify consequences of non or delayed attainment (retention, partial hold on SFCTA funding) of the contractual requirement.
5. The spare parts requirements be revised based on the experience gained over the past year with the new LRV4 vehicles. This should include a specific spare parts plan including a listing of spare parts that Siemens shall maintain in San Francisco for warranty repairs (section 1.2.2.2 of exhibit 5 to the contract). The requirement for a separate warranty replacement stock should be enforced as opposed to allowing warranty parts to come from the assembly line stock.
6. SFCTA should continue monitoring repair solutions and any new issues that may arise during the production and roll-out of the phase 2 LRV4s. The monitoring should include a checklist of issues and their resolution that can be addressed on a regular basis with SFMTA program staff and as appropriate with labor representatives.

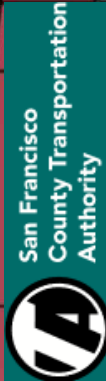
Attachment 2

# PROGRAM MANAGEMENT OVERSIGHT FOR SFMTA LIGHT RAIL VEHICLE PROCUREMENT



www.sfmta.com

Prepared For



Prepared By



February 25, 2020



## **PMOC Role**

Conduct program management oversight for the San Francisco Municipal Transportation Agency's (SFMTA's) Siemens Light Rail Vehicle (LRV ) repairs.

- Consider potential causes and mitigations to the current range of issues including coupler bolt failures, door opening and closing issues, wheel flats and reliability.
- Make recommendations to SFMTA and SFCTA regarding vehicle performance and accountability.

August 2019 through February 2020

## Actions

- Document Review
- 3-Day Deep Dive
- Weekly Commissioning Team Meetings
- Meeting with Operators and Union Representatives
- Safety Protocol monitoring
- On-Site Observations
- Summary Issues Reports;
  - Executive Summary
  - Issues Discussions
  - Recommendations

## Warranty Issues Resolved

Issues	Repair Solutions	Cost/ Responsibility	Timeline
Door Safeguards	Additional sensitive edges added to doors.	Warranty repair	Complete
Pantographs	Electrical shunts added and nuts/bolts replaced	Warranty repair	Complete
Aux. Power Supply	Brackets modified	Warranty repair	Complete
Hydraulic Power Unit	Motor-driver boards, wiring and control valves have been reengineered	Warranty repair	Complete

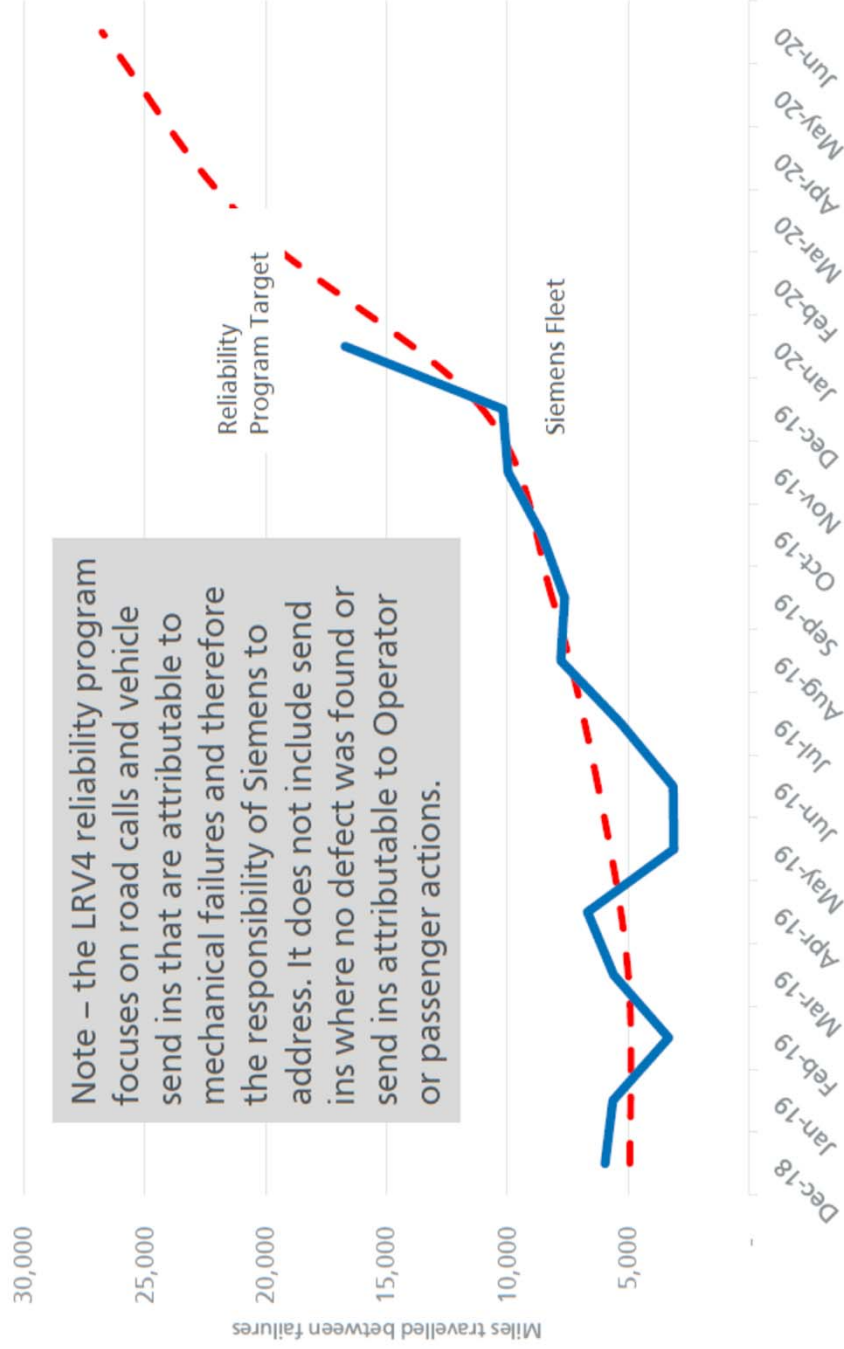
## Issues In-Progress

Issues	Repair Solution	Cost/Responsibility	Timeline
<b>Wheel Flats</b>	Phase 1 LRV4s being retrofitted with additional set of track brakes	\$1.75 M at SFMTA cost	March 2020
<b>Couplers</b>	Temporary fix (shear pin replacements) in place Second round of investigation and testing is underway.	Warranty repair	Testing and analysis to be completed in February, with repairs starting in June
<b>Cameras</b>	SFMTA evaluating camera and monitor size and type	\$1.6M at SFMTA cost for upgrade (estimate)	Timing for upgrade to be determined
<b>Seating</b>	Revised seating style and height have been identified	\$20.2 M at SFMTA cost for upgrade (estimate)	To be determined (Mod 7)
<b>CCTV</b>	Modify software to improve integration	Warranty repair	To be determined
<b>Door Adjustment</b>	Adjustments have been made and testing is in progress	Warranty repair	To be determined
<b>Brake Control Unit</b>	Analysis of brake lock-ups is on-going	Warranty repair	To be determined

# Reliability

Issue	Repair Solution	Cost/ Responsibility	Timeline
<b>LRV Availability</b>	65 of 68 LRV4s commissioned. Daily availability of LRV4s in January was 43. Improving due to warranty repairs	Siemens	Commissioning of final 3 LRV4s scheduled for Spring/Summer
<b>Mean Distance Between Failure (MDBF)</b>	Improved from 4,000 miles in July to approximately 17,000 miles in January	Siemens	SFMTA projects 25,000 miles to be achieved in June 2020
<b>Spare Parts</b>	Improved estimates of spare parts inventory need SFMTA and Siemens to prepare Spare Parts Plan	SFMTA/Siemens	September

# LRV4 Reliability Program



January figures are preliminary and subject to change

## Findings and Recommendations

- Good Progress – repairs being completed, increased availability, improved MDBF
- Resolve Phase 1 repair strategies (e.g. shear pins)
- Hold Lessons Learned workshop including SFMTA program management, operators, mechanics, SFCTA before Phase 2 NTP
  - Spare parts, revise based on Phase 1 experience, assure availability
  - Additional vehicle modifications
  - Delivery/Commissioning timing
- Design reviews prior to approval to proceed with Phase 2 (Mod 7)
  - Assure warranty repairs and requirements of Mods 1-7 are included
- MDBF attainment
  - Clarify timing to meet requirement, consequences of non or delayed attainment (retention, SFCTA partial funding hold)
- Continue SFCTA oversight/monitoring at least through attainment of MDBF requirement and Phase 1 warranty repairs

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# Memorandum

## AGENDA ITEM 11

**DATE:** February 21, 2020  
**TO:** Transportation Authority Board  
**FROM:** Anna LaForte - Deputy Director for Policy and Programming  
**SUBJECT:** 3/10/2020 Board Meeting: Allocate \$60,732,027 in Prop K Sales Tax Funds, with Conditions, for Light Rail Vehicle Procurement

<p><b>RECOMMENDATION</b>   <input type="checkbox"/> Information   <input checked="" type="checkbox"/> Action</p> <p>Allocate \$60,732,027 in Prop K funds, with conditions, to the San Francisco Municipal Transportation Agency (SFMTA) for Light Rail Vehicle (LRV) Procurement.</p> <p><b>SUMMARY</b></p> <p>On April 23, 2019, the Board continued consideration of the SFMTA’s request for \$62.7 million in Prop K funds for the Siemens LRV procurement in light of safety and reliability issues with the vehicle’s doors, brakes, and shear pins, among others. The Board directed staff to conduct independent oversight to identify the root cause of problems, effective fixes, as well as determine whether the cost of the solutions are covered under warranty or at the SFMTA’s expense. We secured the services of T.Y. Lin International to conduct an in-depth review of the issues raised. At the February 25 Board meeting, T.Y. Lin will present their findings and recommendations and SFMTA staff will also give an update on the LRVs. Overall, T.Y. Lin’s findings note that good progress is being made with repairs completed, increased availability of vehicles, and significantly improved reliability. There are a number of recommendations reflecting lessons learned and the need for continued oversight through attainment of the Mean Distance Between Failures (MDBF) reliability requirement and Phase 1 warranty repairs. The attached allocation request form incorporates these recommendations, including a condition to withhold reimbursement of the first \$31.4 million in Prop K funds until the Phase 1 LRVs pass the Reliability Demonstration Test (e.g., reach 25,000 MDBF), and implementation of the oversight protocol shown in Attachment 1. A summary of the Reliability Demonstration Test Requirements is included in Attachment 2.</p>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Fund Allocation</li> <li><input type="checkbox"/> Fund Programming</li> <li><input type="checkbox"/> Policy/Legislation</li> <li><input type="checkbox"/> Plan/Study</li> <li><input type="checkbox"/> Capital Project Oversight/Delivery</li> <li><input type="checkbox"/> Budget/Finance</li> <li><input type="checkbox"/> Contract/Agreement</li> <li><input type="checkbox"/> Other: _____</li> </ul>
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## DISCUSSION

### Background.

The SFMTA is pursuing replacement of its existing fleet of 151 Breda light rail vehicles (LRVs) with an expanded fleet of 219 new Siemens LRVs. The procurement will take place in two phases. Phase 1, procurement of 68 LRVs to expand the current fleet, is nearly complete. Phase 2, procurement of 151 LRVs to replace the aging Bredas, is scheduled to start in Spring 2021 and be complete in early 2026. In October 2014, the Transportation Authority allocated \$131 million in Prop K funds to the project, with the expectation that both phases would be complete by mid-2027. The subject request is for an additional \$60.7 million in Prop K funds, programmed to the project as part of the 2019 update of the Prop K Strategic Plan.

**Table 1: Status of Prop K Funds for Light Rail Vehicle Procurement**

Phase	Scope	Prop K Funds Status	Prop K Commitment	Total Cost	Contract Cost
Phase 1	68 expansion	Allocated	\$ 4,592,490		
		Pending	\$ 96,661		
		<b>Total</b>	<b>\$ 4,689,151</b>	<b>\$ 331,644,983</b>	<b>\$ 296,285,479</b>
Phase 2	151 replacement	Allocated	\$ 126,560,654		
		Pending	\$ 60,635,366		
		<b>Total</b>	<b>\$ 187,196,020</b>	<b>\$ 795,315,346</b>	<b>\$ 666,099,310</b>
<b>TOTAL Phases 1 + 2</b>			<b>\$ 191,885,171</b>	<b>\$ 1,126,960,329</b>	<b>\$ 962,384,789</b>

The subject request incorporates an updated budget and funding plan, reflecting a \$14 million cost increase. The cost increase accommodates about \$10 million to reconfigure passenger seating on the Phase 1 vehicles, and about \$4 million to cover a recalculation of the cost escalation factor specified in the Siemens contract. Discussions between the SFMTA and Siemens are ongoing regarding the correct amount of the escalation amount. There is a possibility that escalation will increase. SFMTA and the Metropolitan Transportation Commission were able to split the cost of the \$14 million increase, drawing from their respective portions of the regional Transit Capital Priorities program comprised of federal formula funds and bridge toll matching funds. Resulting adjustments to the funding plan enabled SFMTA to reduce its Prop K request by \$2 million, compared to the original request last spring. Should escalation costs go up, those Prop K funds could be used to help cover the increase.

### Staff Recommendations.



As noted above, our staff recommendations for the subject allocation request incorporate the recommendations from the independent oversight report produced by T.Y. Lin that is the subject of a separate agenda item at the February 26 CAC meeting. Highlights of a few key deliverables and special conditions are noted below.

As referenced earlier, we developed the oversight protocol shown in Attachment 1 with our project management oversight consultants and with SFMTA's input. Implementing the protocol is a recommended condition of allocation. We are also recommending that reimbursement of the first \$31.5 million in Prop K funds be conditioned, upon the Phase 1 vehicles passing a Reliability Demonstration Test that demonstrates a 25,000-mile MDBF for a period of 6 consecutive months. The \$31 million amount matches the sum of the retention payments in the Siemens contract: \$12.9 million in total retentions on Phase 1 vehicles and an \$18.6 million retention on the Phase 2 vehicles. The 25,000-mile MDBF is a contractual technical specification based on failures attributable to problems that are the responsibility of the vendor. The Reliability Demonstration Test is a contract deliverable.

To help ensure that new vehicles are maintained in a state of good repair, we are recommending that by September 1, 2020, SFMTA would provide a plan describing the preventative maintenance program for the new LRVs. This plan will address the pipeline of components that will need to be replaced in advance of midlife overhauls, including cost and schedule. We also have recommended conditioning the allocation on a commitment by the SFMTA to maintain the new LRVs in a state of good repair, including a mid-life overhaul program, subject to availability of funding.

To address the updated funding plan and the timing of availability of the various fund sources, the SFMTA's request requires amendment of the Prop K Strategic Plan to advance the reimbursement schedule relative to what is currently programmed in the plan. This does result in about a \$5 million increase in financing costs over the entire Prop K program. See the Financial Impacts section below and the attached Allocation Request Form for details.

The Allocation Request Form (Attachment 7) lists the recommended deliverables and special conditions, and contains additional detail on the scope, schedule, cost, and funding plan for the subject request.

## **FINANCIAL IMPACT**

The recommended action would allocate \$60,732,027 in Prop K funds. The allocation would be subject to the Fiscal Year Cash Flow Distribution Schedules contained in the attached Allocation Request Form.

Funding the proposed allocation for Light Rail Vehicle Procurement requires a Prop K Strategic Plan amendment to advance \$96,661 in cash flow from FY23/24 to FY21/22 in the Purchase Additional Light Rail Vehicles category, advance \$17,183,425 in cash flow from FY2021/22 to FY2020/21 in the Vehicles-Muni category, and advance \$3,965,843 in cash flow from FY2022/23 to FY2020/21 in the Vehicles-Undesignated category. The amendment would result in an increase of 0.18% (\$5,331,461) in anticipated financing costs for the Prop K program as a whole, over its 30-year life, which we consider to be minor. See the attached allocation request form for the amendment details.



Attachment 4 shows the approved Fiscal Year 2019/20 allocations and appropriations to date, with associated annual cash flow commitments as well as the recommended allocations, appropriations, and cash flow amounts that are the subject of this memorandum.

Sufficient funds are included in the Fiscal Year 2019/20 budget to accommodate the recommended actions. Furthermore, sufficient funds will be included in future budgets to cover the recommended cash flow distribution for those respective fiscal years.

### **CAC POSITION**

The CAC will consider this item at its February 26, 2020, meeting.

### **SUPPLEMENTAL MATERIALS**

- Attachment 1 - Oversight Protocol
- Attachment 2 - Reliability Demonstration Test (Mean Distance Between Failures) memo
- Attachment 3 - Request Summary
- Attachment 4 - Project Description
- Attachment 5 - Staff Recommendations
- Attachment 6 - Prop K Allocation Summary - FY 2019/20
- Attachment 7 - Allocation Request Form

**Attachment 1**  
**SFCTA Project Management Oversight (PMO) Protocol**  
**for Siemens Light Rail Vehicle Procurement**

Project Management Oversight (PMO) provides a proactive dialogue with the project sponsor while analyzing progress to provide the sponsor with professional opinions and recommendations for action. A critical component is to assess the reasonableness of the scope, schedule and cost, and assess the likelihood that the cost and schedule will hold through completion or revenue service. As part of its oversight, the San Francisco County Transportation Authority (SFCTA) PMO may identify problems and suggest solutions to the project sponsor.

The oversight approach described below is predicated on the shared goal of on-time, on-budget and successful delivery of the Siemens Light Rail Vehicle Procurement project (Project) and on the desire for an approach that is integrated into the Project Management Team's procedures and protocols rather than layering on an additional layer of oversight. The SFCTA PMO is both performing a traditional oversight role and serving as a resource to the Project Management Team.

1. The SFMTA-assigned project manager shall be available to the SFCTA PMO over the course of the project, providing requested documentation and facilitating discussions with members of the project team as requested.
2. The SFMTA shall submit monthly progress reports through the SFCTA's online grants portal ([portal.sfcta.org](http://portal.sfcta.org)). Monthly progress reports shall provide percent complete for the overall project scope, the number of vehicles received, the number of vehicles placed into revenue service, and total expenses incurred (not necessarily invoiced to Prop K) during the reporting period in the previous quarter. Progress reports shall include the most recent vehicle testing and commissioning data, including procurements pursuant to the base contract and any Prop K funded contract options. These reports should be comprehensive in nature and include a detailed description of issues of concern, root cause, proposed solution and status of repair/modifications including but not limited to data on average monthly miles of service, mean distance between failures, as well as any safety, contractual, operational, warranty findings/reports, etc.
3. The SFMTA project manager shall include the SFCTA PMO in internal and external meetings as requested by the SFCTA PMO and agreed to by the project manager, including meetings with vendor, subcontractors and/or consultants.
4. If the Federal Transit Administration (FTA) assigns a PMO contractor (PMOC) to the Project, the SFCTA PMO shall be notified and invited to attend all meetings with the FTA PMOC over the course of the project.
5. At SFCTA PMO discretion, the SFCTA PMO shall:
  - a. Review progress and cost reports and provide comments.
  - b. Participate in pre- and post-delivery vehicle assessment, including review of acceptance reports.
  - c. Participate in all risk workshops and risk management meetings, when scheduled to:
    - i. assess all the items that place the Project at risk as may be included in the risk register;
    - ii. update probability ratings and cost and schedule impacts; and
    - iii. discuss the status/progress of mitigation measures and add new risks as they become evident.
  - d. Participate in all SFMTA Transportation Capital Committee meetings at which scope, schedule, and budget changes to the Project are reviewed. The SFCTA PMO shall review proposed changes in advance of their submittal to the Transportation Capital Committee and provide comment and feedback. The SFMTA project manager or his/her designee shall provide the materials to the SFCTA PMO with a reasonable amount of time for review.
  - e. Review all safety certification processes and documents produced by or for the SFMTA, the state Public Utilities Commission or the FTA.
  - f. Review the test program and have the opportunity to be present for the testing of vehicle systems.

**Attachment 2**

# SFMTA LRV4 Program

## Funding Allocation Request

**To:** Anna Laforte  
**Through:** Jeffrey Tumlin  
**From:** Julie Kirschbaum  
**Date:** February 17, 2020  
**Subject:** SFMTA LRV4 Mean Distance Between Failures

This memo provides a summary of the Reliability Demonstration Test requirements for the LRV4 Contract, as well as an overview of SFMTA's contract authority to hold Siemens accountable to successfully complete the Program.

- The LRV4 Technical Specification requires the fleet to achieve a Mean Distance Between (Chargeable) Train Delays of 25,000 miles.
- Chargeable delays are defined as mechanical failures that are attributable to the design of the train and related ancillary systems, such as the radio. Service failures attributable to Operator or Mechanic actions, as well as send ins related to cleanliness or no defect found are excluded from this analysis.
- This Reliability Demonstration Test is a formal deliverable (CDRL 11) in the testing program.
- The Reliability Demonstration began in August 2018, as we needed enough vehicles in service to demonstrate a *long-term stable reliability*. For this reason, it is among the last tests performed.
- Siemens must demonstrate 25,000 miles for a period of six months and rework the vehicle/repeat the test until it is achieved.
- There are no penalties for not reaching the target; however, the deliverable is not achieved until it is accomplished.
- SFMTA is holding Phase 1 retention payments pending successful completion of the Reliability Demonstration Test. Although we anticipate reaching this milestone sooner, SFMTA will extend the retention hold to Phase 2 vehicles if the demonstration program extends into the Breda replacement process.

A summary of the retention payments is outlined in Table 1.



## Attachment 2

# SFMTA LRV4 Program

## Funding Allocation Request

Table 1. Summary of Retention Payments

Payment	Percent	Amount	Description
<b>Currently Held</b>		<b>\$3,055,293</b>	
Engineering and Test Item 1D	3%	\$337,870	Completion and acceptance of vehicle performance qualification testing
Engineering and Test Item 1E	8.6%	\$840,368	Completion of acceptance of test program
Engineering and Test Item 1F	5%	\$1,877,055	Completion and acceptance of all contract requirements
<b>May be Withheld</b>		<b>\$28,401,821</b>	
Phase 1 Retention: Vehicle Punchlist	3%	\$6,787,590	Retention for each vehicle until punch list items are completed
Retention on other Phase 1 items		\$3,051,706	Retention on change orders, manuals, etc.
Phase 2 Retention: Vehicle Punchlist	3%	\$18,562,525	Retention for each vehicle until punch list items are completed
<b>Total Available Retention</b>		<b>\$31,457,114</b>	

Attachment 3: Summary of Requests Received

Source	EP Line No./Category <sup>1</sup>	Project Sponsor <sup>2</sup>	Project Name	Current Prop K Request	Total Cost for Requested Phase(s)	Leveraging		Phase(s) Requested	District(s)
						Expected Leveraging by EP Line <sup>3</sup>	Actual Leveraging by Project Phase(s) <sup>4</sup>		
Prop K	15, 17M, 17U	SFMTA	Light Rail Vehicle Procurement	\$ 60,732,027	\$ 1,126,960,331	84%	95%	Construction	Citywide
<b>TOTAL</b>					<b>\$ 60,732,027</b>	<b>\$ 1,126,960,331</b>	<b>84%</b>	<b>95%</b>	

Footnotes

<sup>1</sup> "EP Line No./Category" is either the Prop K Expenditure Plan line number referenced in the 2019 Prop K Strategic Plan or the Prop AA Expenditure Plan category referenced in the 2017 Prop AA Strategic Plan, including: Street Repair and Reconstruction (Street), Pedestrian Safety (Ped), and Transit Reliability and Mobility Improvements (Transit).

<sup>2</sup> Acronyms: SFMTA (San Francisco Municipal Transportation Agency)

<sup>3</sup> "Expected Leveraging By EP Line" is calculated by dividing the total non-Prop K funds expected to be available for a given Prop K Expenditure Plan line item (e.g. Pedestrian Circulation and Safety) by the total expected funding for that Prop K Expenditure Plan line item over the 30-year Expenditure Plan period. For example, expected leveraging of 90% indicates that on average non-Prop K funds should cover 90% of the total costs for all projects in that category, and Prop K should cover only 10%.

<sup>4</sup> "Actual Leveraging by Project Phase" is calculated by dividing the total non-Prop K or non-Prop AA funds in the funding plan by the total cost for the requested phase or phases. If the percentage in the "Actual Leveraging" column is lower than in the "Expected Leveraging" column, the request (indicated by yellow highlighting) is leveraging fewer non-Prop K dollars than assumed in the Expenditure Plan. A project that is well leveraged overall may have lower-than-expected leveraging for an individual or partial phase.



Attachment 4: Brief Project Descriptions<sup>1</sup>

EP Line No./ Category	Project Sponsor	Project Name	Prop K Funds Requested	Project Description
15, 17M, 17U	SFMTA	Light Rail Vehicle Procurement	\$60,732,027	Purchase 151 new Siemens Light Rail Vehicles (LRVs) to replace outdated Breda vehicles that are approaching the end of their useful lives, and purchase an additional 68 LRVs to expand Muni's light rail fleet. The purchase includes all associated engineering, manufacture, testing, and warranties for the vehicles, as well as training, manuals, spare parts and special tools to support the new fleet. The new vehicles will improve reliability and be much easier to maintain, The SFMTA expects all of the new LRVs to be approved for service by December 2025, which reflects a 14-16 months of schedule savings compared to the original schedule.
<b>TOTAL</b>			<b>\$60,732,027</b>	

<sup>1</sup> See Attachment 1 for footnotes.

Attachment 5: Staff Recommendations<sup>1</sup>

EP Line No./ Category	Project Sponsor	Project Name	Prop K Funds Recommended	Recommendation Highlights
15, 17M, 17U	SFMTA	Light Rail Vehicle Procurement	\$ 60,732,027	<p><b>Prop K Strategic Plan and 5-Year Prioritization Program (5YPP) amendments:</b> Recommended allocation is contingent on an amendment to the Prop K Strategic Plan and the relevant 5YPPs to advance \$96,661 in cash flow from FY23/24 to FY21/22 in the Purchase Additional Light Rail Vehicles category, advance \$17,183,425 in cash flow from FY2021/22 to FY2020/21 in the Vehicles-Muni category, and advance \$3,965,843 in cash flow from FY2022/23 to FY2020/21 in the Vehicles-Undesignated category. See Attachment 1 in allocation request form for details.</p> <p><b>Reimbursement of the first \$31,457,114 in Prop K funds is conditioned upon the Phase 1 vehicles (68 expansion) passing the Reliability Demonstration Test</b> that demonstrates 25,000-miles Mean Distance Between Failures for a period of 6 consecutive months. See Attachment 2 in allocation request form for details.</p> <p><b>The allocation is conditioned upon implementation by the SFMTA and Transportation Authority of the Project Management Oversight Protocol for Siemens Light Rail Vehicle Procurement</b>, for both Phases 1 and 2. See Attachment 3 in allocation request form for details.</p> <p>Recommended allocation requires SFMTA to provide a <b>plan describing the preventative maintenance program</b> for the Siemens LRVs by September 1. The plan will address replacement of components or sub-components that need to occur in advance of the vehicles' midlife overhaul, including cost and schedule.</p>
<b>TOTAL</b>			<b>\$60,732,027</b>	

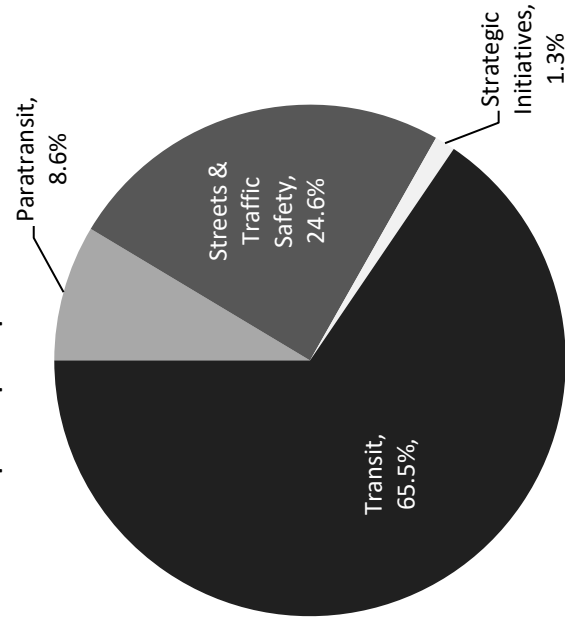
<sup>1</sup> See Attachment 1 for footnotes.

**Attachment 6.  
Prop K and Prop AA Allocation Summaries - FY 2019/20**

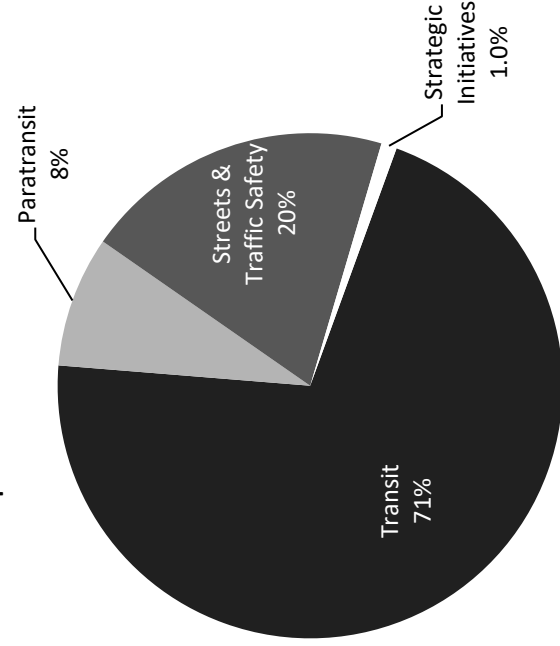
<b>PROP K SALES TAX</b>		<b>\$40,000</b>	<b>\$25,000</b>	<b>\$15,000</b>				
<b>Total</b>		<b>FY 2019/20</b>	<b>FY 2020/21</b>	<b>FY 2021/22</b>	<b>FY 2022/23</b>	<b>FY 2023/24</b>	<b>FY 2024/25</b>	<b>FY 2025/26</b>
Prior Allocations	\$ 73,328,808	\$ 23,173,415	\$ 33,420,981	\$ 7,281,046	\$ 3,354,622	\$ 2,690,622	\$ 2,690,622	\$ 717,500
Current Request(s)	\$ 60,732,027	\$ -	\$ 21,149,268	\$ 96,661	\$ 6,580,107	\$ 32,869,459	\$ 36,532	\$ -
<b>New Total Allocations</b>	<b>\$ 134,060,835</b>	<b>\$ 23,173,415</b>	<b>\$ 54,570,249</b>	<b>\$ 7,377,707</b>	<b>\$ 9,934,729</b>	<b>\$ 35,560,081</b>	<b>\$ 2,727,154</b>	<b>\$ 717,500</b>

The above table shows maximum annual cash flow for all FY 2019/20 allocations and appropriations approved to date, along with the current recommended allocation(s).

**Investment Commitments,  
per Prop K Expenditure Plan**



**Prop K Investments To Date**



# San Francisco County Transportation Authority

## Prop K/Prop AA Allocation Request Form

<b>FY of Allocation Action:</b>	FY2019/20
<b>Project Name:</b>	Light Rail Vehicle Procurement
<b>Grant Recipient:</b>	San Francisco Municipal Transportation Agency

### EXPENDITURE PLAN INFORMATION

<b>Prop K EP categories:</b>	Vehicles - Undesignated, Purchase Additional LRV's, Vehicles - MUNI
<b>Current Prop K Request:</b>	\$60,732,027
<b>Supervisory District(s):</b>	Citywide

### REQUEST

#### Brief Project Description

Purchase 151 new Light Rail Vehicles (LRVs) to replace outdated Breda vehicles that are approaching the end of their useful life and purchase an additional 68 LRVs to expand Muni's light rail fleet, 24 of which will accommodate the opening of Central Subway, 4 for the Golden State Warriors Arena (Chase Center) in Mission Bay, and 40 for citywide service expansion.

#### Detailed Scope, Project Benefits and Community Outreach

See UPDATED detailed scope description and project background, attached.

#### Project Location

Citywide

#### Project Phase(s)

Construction (CON)

### 5YPP/STRATEGIC PLAN INFORMATION

<b>Type of Project in the Prop K 5YPP/Prop AA Strategic Plan?</b>	Named Project
<b>Is requested amount greater than the amount programmed in the relevant 5YPP or Strategic Plan?</b>	Greater than Programmed Amount
<b>Prop K 5YPP Amount:</b>	\$62,767,638

#### Justification for Necessary Amendment

The SFMTA is requesting an amendment to the Prop K Strategic Plan to advance cash flow of \$96,661 for purchase of LRVs to expand the existing fleet from FY23/24 to FY21/22 in the Purchase Additional Light Rail Vehicles category (EP-15); advance cash flow of approximately \$17.2 million from FY2021/22 to FY2020/21 in the Vehicles-Muni category; and advance cash flow of approximately \$4 million from FY2022/23 to FY2020/21 in the Vehicles-Undesignated category.

The amendment would result in a minor 0.19% or \$5.3 million increase in finance costs to the Strategic Plan as a whole.

### **Detailed Scope, Project Benefits and Community Outreach**

On September 9, 2014, the San Francisco Board of Supervisors unanimously approved a 15-year light rail vehicle (LRV) procurement contract with Siemens Industry, Inc., for the SFMTA to purchase up to 260 new LRVs. The base contract is for 175 cars, 151 cars to replace the existing Breda LRVs and 24 additional cars needed for increased service demand for the Central Subway and Mission Bay. The contract also includes two options to acquire up to a total of 85 additional LRVs to meet projected future ridership growth and system capacity expansion needs through 2040. The SFMTA has already optioned the first 40 expansion vehicles and still reserves the right to option the remaining 45 expansion vehicles in the contract. The SFMTA procured an additional four expansion vehicles through a change order to the contract to accommodate an increase in ridership due to the construction of the Chase Center.

Highlights of the project are:

1. The project will grow SFMTA's LRV fleet by more than 45 percent and will help move the Agency forward toward achieving its strategic goal of creating a safer, more efficient and reliable transportation system.
2. The new vehicles are purchased at a 20 percent lower cost than the SFMTA projected cost.
3. The purchase includes all engineering, design, manufacture, test, and warranty of the vehicles together with training, manuals, spare parts and special tools to support the new fleet.
4. The new cars are to maintain, and reliability will improve from the current Breda fleet level of approximately 5,000 miles between failures to a contractual requirement of 25,000 miles between failures.
5. LRVs are designed and built at the Siemens plant in Sacramento, CA which will stimulate economic growth by creating more jobs in the Northern California region while facilitating communications between Siemens and the SFMTA, enabling faster response of postdelivery support while saving on costs for delivery and travel.
6. The proposed vehicle offers safety enhancements such as hydraulic brakes, bright LED lighting, and improved driver visibility.

In 2012, the San Francisco Municipal Transportation Agency (SFMTA) broke ground of the first major subway system expansion in decades. The Central Subway project connects the existing T-Third light rail line to a new subway tunnel at 4<sup>th</sup> & King and will bring subway service to three new subway stations: Yerba Buena/Moscone Center, Union Square, and Chinatown. To support the increased service demand for the Central Subway project as well as system-wide growth along the Mission Bay corridor, the SFMTA selected Siemens Mobility to provide 24 expansion vehicles, and to provide a critically-needed replacement fleet of 151 existing vehicles which will reach the end of their useful life beginning in 2021. The SFMTA has since optioned an additional 40 expansion vehicles to support increased ridership along the T-Third corridor and purchased an additional four cars funded out of the Mission Bay Transportation Improvement Fund to better serve the new Chase Center. This represents a total of 68 expansion cars, the last of which is expected to enter revenue service by summer 2020.

The SFMTA pursued a very aggressive manufacturing and delivery schedule: the SFMTA issued Notice to Proceed on September 19, 2014. The first vehicle was delivered in January 2017 and entered service in November 2017. The SFMTA achieved system-wide regular service in fall of 2018 and plans to accelerate the procurement of the second phase of the procurement: the purchase of 151 replacement light rail vehicles.

The SFMTA has worked with the Metropolitan Transportation Commission (MTC) and the Transportation Authority to develop an accelerated procurement of 151 replacement light rail vehicles. Together, the three agencies have finalized a funding plan that provides the necessary funds on an accelerated schedule and also provides supplemental funding needed for change orders as well as escalation costs.

The revised timeline will accelerate delivery of the replacement vehicles by shortening the overall delivery window from six and a half years to five. The chief advantages are providing more reliable service sooner

to the public and reducing operations and maintenance costs by retiring older vehicles that cost more to maintain in adequate condition. The primary tradeoff considered was financing costs needed to ensure cash is on hand to meet the proposed accelerated schedule. These costs reduce funds that would be available for other projects, including future vehicle procurements.

In developing this proposal, the SFMTA completed a cost-benefit analysis which was presented to the San Francisco Transportation Authority Board in Spring 2019. This analysis identified a range of potential savings (costs) of \$37 million (\$8 million). Costs are associated with Prop K financing, potential FTA financing and one-time cost for Siemens to re-tool production facilities to add production capacity. The benefits identified include dramatically reduced need for major system overhauls on the legacy Breda fleet, the reduction of risk associated with major component failures and parts obsolescence, and the comparatively significant, and growing, parts and labor costs of maintaining the Breda fleet over the next five to seven years. The upcoming replacement phase will provide critically needed relief for our aging light rail fleet and ensure that the SFMTA can continue to provide frequent, reliable and sustainable transportation to the residents and visitors of San Francisco.

### **Phase 2 Update (151 Replacement LRVs)**

The change orders that will be incorporated into the next phase of the project address passenger feedback to improve comfort, others address issues raised by maintenance and operations staff to improve the operability and maintainability of the fleet over the next 25 years. The full list of these items and their anticipated associated costs can be viewed in *Scope Attachment A*. Noteworthy changes are highlighted in *Scope Attachment B*. They include changes to seating type and configuration based on extensive public outreach and feedback, updating the track brake design to address flattened wheels, as well as numerous maintenance-related requests to reduce the amount of time required to maintain the vehicles in a state of good repair. These change orders have been refined over the past eighteen months in collaboration with MTC and the SFCTA as well as with union leadership and operations and maintenance staff. It is important to note that these change orders differ from the ongoing warranty items, whose costs are borne solely by Siemens, that are briefly described below.

In April 2019, the project faced a series of significant setbacks which required renewed attention to the systems engineering and design. The project team worked collaboratively with Siemens to resolve the urgent issues of poor door sensitivity and failed coupler components, and all vehicles were retrofitted and returned to regular, unrestricted operations by July 2019. The couplers again faced challenges in December 2019 when we experienced a failure of the shear bolt in revenue service. On evaluation, Siemens determined the bolts to be safe for use in coupled vehicles if replaced every 120 days. At present, Siemens is developing an updated coupler design to permanently address this second failure and the fleet is operating without restrictions. These updated designs will be incorporated into the procurement at zero cost to SFMTA.

In addition to these high-profile mechanical issues, Siemens has redoubled efforts to improve the vehicle's overall reliability by continuing progress towards the contractual reliability standard of 25,000 miles between failures (MDBF). After a few challenges due primarily to a component called the hydraulic power unit (HPU) in May and June 2019, the reliability program has continued to make significant progress towards the reliability goals established by Siemens and the project team.

### **Note**

For additional details on these issues, see the Independent Management and Oversight Report of the SFMTA's Siemens LRV procurement on the February 25, 2020 Transportation Authority Board agenda.

### **Supplemental Materials**

Attachment A: Phase 2 Change Order Rough Order of Magnitude Costs

Attachment B: LRV4 Project Updates Included in Phase 2

**Attachment A:  
Phase 2 Change Order Rough Order of Magnitude Costs**

<b>Change Order</b>	<b>Mod 5</b>	<b>Mod 6</b>	<b>Mod 7</b>	<b>Total</b>
Track brakes, remaining vehicles	\$470,000	\$1,280,000	\$2,940,000	\$4,690,000
Additional Flip Seats (Legacy item)	\$ -	\$700,000	\$ -	\$700,000
Interior Seating -Single Transverse 50 vehicles (2A)	\$ -	\$710,000	\$7,650,000	\$8,360,000
Interior Seating - Double Transverse 101 vehicles (2B)	\$ -	\$160,000	\$2,390,000	\$2,550,000
Interior Seating -Single Transverse retrofit 68 vehicles	\$ -	\$ -	\$7,460,000	\$7,460,000
Exterior Car shell Roof Access Steps (legacy item)	\$ -	\$830,000	\$ -	\$830,000
Illuminated and twisting PBEB	\$ -	\$140,000	\$ -	\$140,000
LRV4 Decals	\$ -	\$100,000	\$ -	\$100,000
MDS wireless communication to Wayside	\$ -	\$90,000	\$ -	\$90,000
Front step momentary switch	\$ -	\$70,000	\$ -	\$70,000
Relocation of clipper DCU	\$ -	\$60,000	\$ -	\$60,000
Rotation of CCTV firetide router	\$ -	\$30,000	\$ -	\$30,000
Replace door touch strips with passenger door open PBs	\$ -	\$ -	\$270,000	\$270,000
Provisions for ease of tire replacement	\$ -	\$ -	\$410,000	\$410,000
PIS 40 A pattern change	\$ -	\$ -	\$370,000	\$370,000
Corner Hatch additional retention clips	\$ -	\$ -	\$250,000	\$250,000
Self locking exterior EDR door	\$ -	\$ -	\$270,000	\$270,000
Televic PIS change items	\$ -	\$ -	\$190,000	\$190,000
Pre Wiring for Additional Clipper card readers	\$ -	\$ -	\$210,000	\$210,000
Lockable Convenience Outlet	\$ -	\$ -	\$160,000	\$160,000
TDR6 HDD Unmounted	\$ -	\$ -	\$40,000	\$40,000
Step Audible and visual alert 1.5s before moving	\$ -	\$ -	\$ -	\$ -
Bracket for 5lb Fire Extinguisher	\$ -	\$ -	\$ -	\$ -
Floor Hatch Fasteners to Philips head	\$ -	\$ -	\$ -	\$ -
Remove J Holder for Advertising placards	\$ -	\$ -	\$ -	\$ -
Reduce Deadman delay to zero seconds	\$ -	\$ -	\$ -	\$ -
Track Iron holder clips	\$ -	\$ -	\$ -	\$ -
Front door push button to Blue	\$ -	\$ -	\$ -	\$ -
Additional of door open Tape Switch	\$ -	\$ -	\$ -	\$ -
Passenger Emergency Stop PB	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$470,000</b>	<b>\$4,170,000</b>	<b>\$22,610,000</b>	<b>\$27,250,000</b>

Additional costs that are not design/engineering modifications:

	<b>Mod 5</b>	<b>Mod 6</b>	<b>Mod 7</b>	<b>Total</b>
Accelerated Schedule	\$ -	\$ 5,600,000	\$ 19,900,000	\$ 20,460,000

The accelerated delivery schedule timeline is demonstrated below, and will result in 14-16 months of schedule savings by compressing the delivery of the Siemens cars and subsequent retirement of the legacy Breda fleet:

<b>Original</b>	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Expansion	68													
Replacement					151									
<b>Accelerated</b>	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Expansion	68													
Replacement					151									



## **Attachment B: LRV4 Project Updates Included in Phase 2**

At the execution of the LRV4 project in 2014, the contract included provisions to provide opportunity for both sides to revisit the lessons learned during the Phase 1 Expansion and to incorporate changes into the Phase 2 Replacement. As we prepare to initiate Phase 2, we have reviewed the procurement, gathered substantial feedback from the public, staff, maintenance, and operations, to ensure the public benefit from these lessons learned.

Contract Mod 7. Includes three types of updates:

1. Design and engineering updates to correct warranty-related issues identified in Phase 1
2. Design and engineering updates to improve on the original design
3. An accelerated production and delivery schedule to enable a faster Phase 2 and an earlier retirement of our legacy Breda fleet

Beginning in April 2019, several maintenance and engineering items have come to public attention. To ensure clarity on what constitutes a change order, an item whose cost is borne by the SFMTA, and what constitutes a warranty item, an item whose cost is borne by Siemens, we are providing the following summary.

This list is not exhaustive of every change order or of every warranty item. However, it provides a background and summary for the items that, to date, have received elevated public scrutiny to provide clarity and improve comprehension of what items are included in the funding request and what items are subject to ongoing warranty claims.

### **WARRANTY ITEMS**

Warranty items are those covered due to unexpected and premature failure of a component on the fleet. The LRV4 vehicle is covered by a five-year, all-inclusive warranty that begins at vehicle acceptance. This means that vehicles have a rolling deadline for warranty expiration based on the month and year they were accepted into service. Warranty items come at **zero cost** to the SFMTA, they are addressed by Siemens and its subcontractors.

### **Fleetwide Defects**

The early stage of any fleet procurement faces unique challenges where components and designs are put into service and occasionally do not function as expected. This may result in premature failures of parts that sometimes may require a full fleetwide retrofit. The SFMTA has experienced several well-documented instances of both kinds of failure and has endeavored to minimize the impact to passengers by initiating stopgap measures wherever safe to do so while a longer-term fix is developed. Fleetwide defects are by nature impossible to prepare for. They are a systemic and unexpected malfunction that are impossible to predict and head off. In some cases, this has required the use of parts from non-commissioned vehicles, essentially "borrowing" parts to keep vehicles in service from a vehicle that is not currently used for service. This was most recently done by using parts from car 2033. In other cases, we have been able to access new parts via Siemens' manufacturing line which has reduced the length of time between discovering an issue and installing either a short- or long-term fix to keep the fleet available for service. These defects are covered under warranty and diminish in number over time. Below is a list of major

fleetwide defects we experienced during Phase 1, all of which were covered under warranty. Each updated design will be incorporated into the original design and manufacture of the Phase 2 vehicles.

### **Auxiliary Power Supply**

#### *Description*

The Auxiliary Power Supply (APS) Line Choke is on the roof of the car and is part of the vehicle power supply. It is **not** intended to be waterproof, as air circulation is critical, but should drain when wet.

#### *Issue*

During winter of 2018-2019 we experienced several failures and at least one instance of arcing. An analysis determined the mounting provided inadequate drainage, with water pooling in the unit resulting in the failures.

#### *Resolution*

Siemens updated the mounting design to improve drainage and outfitted all expansion vehicles with the correct mounting to resolve the issue. This design will be incorporated into the replacement phase production at no cost.

### **Pantograph**

#### *Description*

Pantographs are the equipment on the top of the light rail vehicle that collects power from the overhead catenary and passes it to the vehicle.

#### *Issue*

A pantograph overheated and caused a fault while in service. An analysis determined that Nyloc nuts were inappropriately used, and that the design should move to an all-metal fastener and include additional shunts to provide a low-resistance path of the electric current to move safely.

#### *Resolution*

Siemens updated the design including new nut types and shunts. All expansion vehicles were retrofitted to resolve the issue. This design will be incorporated into the replacement phase production at no cost.

### **Door Sensitive Edges**

#### *Description*

The LRV4 vehicles have a single panel door at the entrance adjacent to the operator cab located at either end of the vehicle.

#### *Issue*

In spring 2019, there were several instances of passengers whose hands became caught in the single panel doors located adjacent to the operator cab, but which were not registered as obstructions by the system. A review of the incidents and a subsequent analysis determined the single-panel doors to have inadequate sensitivity.

*Resolution*

Siemens added an additional sensitive edge to enhance the range of obstructions that could be sensed by the system. All expansion vehicles were retrofitted to resolve the issue. This design will be incorporated into the replacement phase production at no cost.

**Coupler***Description*

The coupler is a vehicle component that allows for two or more trains to be joined under the control of a single operator. The SFMTA currently operates vehicles in two-car *consists* or couples, but the LRV4 vehicle is designed to operate up to four cars coupled together.

*Issue*

An operator reported a coupler failure, which, on inspection, showed a broken *shear bolt*. A shear bolt is a component within the coupler that is designed to fail first to protect the more complex and critical components within the coupler when it experiences undue strain. An analysis determined that a second component within the coupler, the mounting plate, did not have adequate clearance for horizontal swing, and was causing damage to other components within the coupler.

*Resolution*

Siemens updated the design and deployed the fix to the expansion vehicles. However, in December 2019, Siemens notified SFMTA that they believe additional work is required before this issue can be deemed resolved. That same day, an operator reported a failure of a coupler in the maintenance yard.

The SFMTA is currently replacing the shear bolts on a 120-day cycle while Siemens works with its subcontractor to address the issue and develop a long-term fix. The updated design will be applied to the expansion fleet and incorporated into the design and manufacture of the replacement fleet at no cost to the SFMTA.

**Hydraulic Power Unit***Description*

The Hydraulic Power Unit (HPU) supports the hydraulic friction brakes.

*Issue*

During the latter half of 2019, the HPUs were failing in service at an extremely high rate that was resulting in service delays for passengers and dramatically reduced reliability figures for the LRV4 fleet. An analysis identified a component called the *motor driver board* to be the cause of these failures.

*Resolution*

Siemens developed an update to the motor driver boards and issued a Field Modification. All expansion vehicles were retrofitted to resolve the issue. This design will be incorporated into the replacement phase production at no cost.

**NON-WARRANTY ITEMS DURING WARRANTY PERIOD**

Non-warranty replacements are also common, even while a vehicle is under the warranty period. An example of this would be a vehicle collision, which is not covered by warranty but rather is the SFMTA's responsibility to resolve. For this reason, the SFMTA keeps its own spare parts in addition to relying on Siemens for warranty parts. The LRV4 contract calls for one spare train set of all major subsystems as part

of the Phase 1 Expansion phase procurement. The contract also provides a price list for specialized spare parts to expedite procurement in the event additional parts are required as well as an allowance for unanticipated future needs.

In addition to these contractual mechanisms for obtaining parts, the SFMTA benefits from the geographic proximity to the Siemens manufacturing plant in Sacramento, CA. Siemens constant production of light rail vehicles and ongoing relationships with subcontractors can improve lead times on particularly specialized parts. This has been especially useful in quickly addressing some non-warranty failures.

### CHANGE ORDERS

Change orders are directions to Siemens from the SFMTA to make an alteration to the proposed or agreed-to design. These costs are borne by the SFMTA. The change orders included in Phase 2 via Contract Mod 7 are as follows:

*Table 1: Contract Mod. 7 Change Orders*

<b>Update</b>	<b>Description</b>	<b>Client/Beneficiary</b>
Track Brakes Installation, Phase 2	Adding track brakes to all 151 Phase 2 vehicles to alleviate flat wheels.	Maintenance
Implementation of Interior Seating – Phase 1 Single Transverse	Seat changes, retrofits 68 Phase 1 vehicles with single transverse seating and related reconfigurations.	Passenger
Implementation of Interior Seating – Phase 2 Single Transverse	Seat changes, production of first 50 Phase 2 vehicles with single transverse seating and related reconfigurations.	Passenger
Implementation of Interior Seating – Phase 2 Double Transverse	Seat changes, production for 101 Phase 2 vehicles with double transverse seating and related reconfigurations.	Passenger
Lockable Convenience Outlet	A lockable cover will be added to the convenience outlet for all 219 Vehicles.	Maintenance/Operations
Televic Passenger Information System change items	Multiple Passenger Information System (PIS) enhancements to update the technology consistent with evolving needs and expectations.	Passenger
TDR6 HDD Unmounted	The TOD will display a message when the TDR6 HDD is unmounted to assist maintenance, troubleshooting, and verifying readiness for service for all 219 Vehicles.	Operations/Maintenance
Corner Hatch additional retention clips	The Corner Hatch will be modified to prevent it from quickly opening when unlocked for all 219 Vehicles.	Operations/Maintenance
Replace door touch strips with passenger door open PBs	On 151 Phase 2 vehicles only, each doorway shall have 'keep door open' push buttons instead of the touch strips	Passenger

Push to Close locking feature addition to exterior EDR door	The Exterior Manual Emergency Door Release access panel when include a locking feature when pushed closed for all 219 Vehicles.	Operations/ Maintenance
Pre-Wiring for Additional Clipper card readers	Wiring for additional Clipper card readers will be included on 151 Phase 2 Vehicles.	Passenger/ Operations
Provisions for ease of tire replacement	Wheel hubs specified in this change will be designed with a hole pattern for easier tire replacement and use with shop equipment on 151 Phase 2 Vehicles.	Maintenance
PIS 40 A pattern change	The Passenger Information System will be modified to allow remote and manual changes to information displays at any time.	Passenger/ Maintenance

## DETAILED SUMMARY OF HIGH-PROFILE ITEMS THAT HAVE BEEN DISCUSSED PUBLICLY

### Wheel Flat Spots/Track Brakes

#### *Description*

Light rail vehicles are equipped with wheels that contain a metal “tire” component. When the vehicle experiences a harsh stop, the tire can flatten out. While this does not pose a safety risk, a flattened tire will sound like a jackhammer as it rolls down the trackway, and in extreme cases, can cause undue wear to the track itself. It is practice to remove a vehicle with flattened wheels from service, which can negatively impact riders.

#### *Issue*

The design requirements levied upon Siemens required compliance with regulatory emergency brake rates and did not require specific technologies to achieve those rates. Siemens designed the vehicle to meet these requirements using industry standard solutions common in other municipalities. However, in SFMTA’s unique and challenging mixed-traffic conditions, Operators routinely use emergency braking. When the fleet was regularly used to support revenue service it became clear that the approved design using a single set of track brakes was not compatible with the operating environment and wheel flats were occurring at an unsustainable rate.

#### *Resolution*

To resolve this issue, the SFMTA initiated discussions with Siemens in 2018 to explore options for alterations to the track brake design. This new track brake design is included in the Mod 7 suite of change orders, it will be applied retroactively to the existing fleet of 68 expansion vehicles and will be incorporated into the production of the 151 Phase 2 replacement vehicles.

#### *Cost and Funding*

Because this is an operations and behavior issue, and not a mechanical fault or flaw, the SFMTA bears the full cost of this redesign and retrofit. The total cost associated with this change is \$5.1M. The SFMTA has already executed two contract modifications to begin design and procurement of this update. Mod 5 contributed \$470,000 and Mod 6 \$1.7M to this work. Mod 7, which is the subject of this request, will provide the final \$2.9M required.

## Cameras/Monitors

### *Description*

In developing the design of the vehicle, Siemens had to contend with significant grades and turns within the SFMTA light rail system. They proposed the application of rear-view camera monitors in place of physical external mirrors to reduce the amount of limited space given over to these external protrusions. Operators can view the exterior of the vehicle from a monitor in the cab rather than looking at the rear mirrors. Rear view monitors are used across the globe and are a relatively new, but not novel design feature.

### *Issue*

In conversations with operators, through anonymous feedback, and in communications with the operators' union, it became clear that many operators felt the screens were too small to view the exterior of the vehicle. The LRV4 Project Team has worked with Siemens to prototype new and different monitors, which have a "pinch and zoom" feature that allow operators to zoom in on any camera view they would like to see more closely.

### *Resolution*

Through several rounds of prototyping, the SFMTA has identified desired updates. However, to date, there remain refinements required with each of the prototypes. It was our intention to include an updated camera design to this Mod 7 suite of change orders. However, because the final design has not been determined, it will be held to a future, independent modification. There is no debate regarding the need for an updated camera configuration. However, it is essential all parties agree to the final design before it is executed.

### *Cost and Funding*

Until the final design is selected, we will not have a cost estimate for this item.

## Seats

### *Description*

The SFMTA performed extensive outreach in 2014 ahead of the bid and award of the LRV4 contract, reaching more than 1,400 riders and asking their preferences across several design factors. This survey indicated approximately half of riders preferred side-running or *longitudinal* seating configuration, while the other half preferred front/back-facing or *transverse* seating configuration like the design on the Breda vehicles. The SFMTA determined to pursue a longitudinal design that also utilized benches rather than articulated individual seating. This is a common application in major cities world-wide and can improve the standing capacity and ease of access to the vehicles through wider aisles.

### *Issue*

In early 2019, the SFMTA conducted a second survey of riders to identify areas of improvement. The new vehicles had been deployed system-wide for several months, and riders had become familiar with the new features. This on-board survey identified general apathy with the seating design, more specifically with the seating height and with the bench design. In a narrower focus group setting, and in follow up conversations with rider advocacy groups, it became clear that a group of riders, disproportionately those with mobility disabilities, had significantly higher rates of dissatisfaction with the seating design on board the vehicles.

To address their feedback, the SFMTA worked with Siemens to develop updated seating configurations, which were presented to numerous advocacy groups and publicly at both the SFMTA and SFCTA Board meetings.

#### *Resolution*

The SFMTA determined that an updated seating design that reintroduced the individual-style seating and added in transverse seating options would address the concerns raised during this secondary outreach. There will ultimately be two seating configurations with the 68 expansion vehicles and the first 50 replacement vehicles equipped with what is referred to as the *single transverse* design. The final 101 replacement vehicles will be equipped with the *double transverse* design.

#### *Cost and Funding*

During the development of the Phase 2 contract modification budget and funding plan, the SFMTA identified the need for some interior configuration updates to address public feedback. The cost estimate used in the discussions that occurred between spring 2018 and early 2019 did not account for the extensive change that was selected. The cost of these changes is a total of \$18.3M, this is broken down as follows:

- Retrofit (68): \$7.6M
- Single Transverse (50): \$2.3M
- Double Transverse (101): \$7.5M

Contract Mod 6 provided initial funding of approximately \$870,000 to begin design work on required for this change to move forward. Mod 7 will provide the remaining \$17.5M in funding.

### **PROJECT COST UPDATE BETWEEN APRIL 2019 and MARCH 2020**

The total project cost inclusive of Contract Mod. 7 is \$1,126,960,331. Mod. 7 represents an increase in previously approved funding to account for three primary activities:

1. Change orders (as described above)
2. Accelerated production and delivery schedule
3. Escalation per the contract requirements

In April 2018, the SFMTA planned to initiate Phase 2, and provided a project budget of \$1,112,450,192. This current proposal represents a \$14,510,140 increase in the total cost. The primary driver of this increase was the final design selected for the seating retrofits, which were more substantial than previously anticipated. Approximately \$10M in this increase is attributable the cost of these changes above and beyond the estimate used to formulate the April 2019 budget. During the interim period, the escalation on the project has continued to fluctuate. We budgeted approximately \$4M in increased escalation costs due to changes in the macroeconomic indicators utilized in the calculation of escalation during this interim period.

These costs will be covered by MTC and the SFMTA under an agreement based on the rules established by the Transit Capital Priorities policies at a rate of approximately \$5.9M and \$8.6M respectively. This change is included in the overall project budget and funding plan.

## San Francisco County Transportation Authority Prop K/Prop AA Allocation Request Form

<b>FY of Allocation Action:</b>	FY2019/20
<b>Project Name:</b>	Light Rail Vehicle Procurement
<b>Grant Recipient:</b>	San Francisco Municipal Transportation Agency

### ENVIRONMENTAL CLEARANCE

<b>Environmental Type:</b>	EIR/EIS
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### PROJECT DELIVERY MILESTONES

Phase	Start		End	
	Quarter	Calendar Year	Quarter	Calendar Year
Planning/Conceptual Engineering				
Environmental Studies (PA&ED)				
Right of Way				
Design Engineering (PS&E)				
Advertise Construction	Jul-Aug-Sep	2013		
Start Construction (e.g. Award Contract)	Jul-Aug-Sep	2014		
Operations				
Open for Use			Jan-Feb-Mar	2026
Project Completion (means last eligible expenditure)			Oct-Nov-Dec	2026

### SCHEDULE DETAILS

First replacement LRV will be placed in service in March 2021.  
Last replacement LRV will be placed in service in March 2026.  
See attached schedule for more details.

On June 19, 2014, the San Francisco Planning Department determined (Case Number 2014.0929E) that the Procurement of New Light Rail Vehicles is statutorily exempt from CEQA as defined in Title 14 of the California Code of Regulations Section 15275(a), which provides an exemption from environmental review for the institution or increase of passenger or commuter service on rail lines already in use.

The Central Subway Final Supplemental Environmental Impact Statement / Supplemental Environmental Impact Report (Central Subway SEIS/SEIR) evaluated the environmental impacts of an increase in passenger rail service associated with the Central Subway project, which some of the Light Rail Vehicles will service. On August 7, 2008, the San Francisco Planning Commission certified the Final SEIR (Case No. 1996.281E).



# San Francisco County Transportation Authority Prop K/Prop AA Allocation Request Form

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<b>FY of Allocation Action:</b>	FY2019/20
<b>Project Name:</b>	Light Rail Vehicle Procurement
<b>Grant Recipient:</b>	San Francisco Municipal Transportation Agency

## CURRENT PROP K REQUEST

Fund Source	Planned	Programmed	Allocated	Project Total
PROP K: Purchase Additional LRV's	\$0	\$96,661	\$0	\$96,661
PROP K: Vehicles - MUNI	\$0	\$50,089,416	\$0	\$50,089,416
PROP K: Vehicles - Undesignated	\$0	\$10,545,950	\$0	\$10,545,950
<b>Phases in Current Request Total:</b>	<b>\$0</b>	<b>\$60,732,027</b>	<b>\$0</b>	<b>\$60,732,027</b>

## FUNDING PLAN - ENTIRE PROJECT (ALL PHASES)

Fund Source	Planned	Programmed	Allocated	Project Total
PROP K	\$0	\$60,732,027	\$131,153,144	\$191,885,171
TIRCP	\$0	\$0	\$113,140,000	\$113,140,000
REVENUE BOND	\$0	\$0	\$145,050,650	\$145,050,650
REGIONAL MEASURE 3	\$7,122,556	\$0	\$0	\$7,122,556
OPERATING FUNDS	\$0	\$0	\$8,000,000	\$8,000,000
FTA OTHER	\$0	\$0	\$10,227,539	\$10,227,539
FTA FORMULA	\$0	\$516,648,275	\$0	\$516,648,275
CENTRAL SUBWAY (FTA, PTMISEA)	\$0	\$0	\$16,800,000	\$16,800,000
CCSF - ERAF ALLOCATION TO GENERAL FUND	\$0	\$19,000,000	\$19,247,904	\$38,247,904
BATA PROJECT SAVINGS	\$0	\$0	\$59,118,014	\$59,118,014
AB 664 BRIDGE TOLLS	\$0	\$20,720,222	\$0	\$20,720,222
<b>Funding Plan for Entire Project Total:</b>	<b>\$7,122,556</b>	<b>\$617,100,524</b>	<b>\$502,737,251</b>	<b>\$1,126,960,331</b>

**Light Rail Vehicle Procurement - 151 Replacement and 68 Expansion  
Committed Funds**

Fund Source	March 2019	Current	Difference March '19 - Current	Status
<b>MTC Funds</b>				
FTA 5307/5337 funds, RM3 Fund Exchange	\$ 397,329,679	\$ 516,648,275	\$ 119,318,596	Committed per MTC Reso 4123, approved 12/18/13.
Regional Measure 3	\$ 108,435,990	\$ -	\$ (108,435,990)	Intent was to use RM3 funds, but more recent discussions with MTC indicated that Transit Capital Priority funds should be available to the project.
AB 664 Bridge Tolls	\$ 14,727,570	\$ 14,727,570	\$ -	Committed per MTC Resolution 4123, approved 12/18/13, Not allocated to date.
Bay Area Toll Authority (BATA) Project Savings	\$ 65,110,666	\$ 65,110,666	\$ -	Committed per MTC Resolution 4123, approved 12/18/13, \$59,118,014 allocated.
<b>MTC Subtotal</b>	<b>\$ 585,603,905</b>	<b>\$ 596,486,511</b>	<b>\$ 10,882,606</b>	

<b>SFMTA Funds</b>				
Prop K (151 replacement vehicles)	\$ 189,328,294	\$ 187,196,020	\$ (2,132,274)	Committed: \$126,560,654 allocated on 10/21/2014; \$60,635,366 request pending. <sup>1</sup>
Prop K (24 expansion vehicles)	\$ 4,592,490	\$ 4,689,150	\$ 96,660	Committed: \$4,592,490 allocated by SFCTA 10/21/2014, fully expended. \$96,661 request pending. <sup>1</sup>
Regional Measure 3 (RM3)	\$ -	\$ 7,122,556	\$ 7,122,556	This could be an exchange <sup>2</sup>
Revenue Bond	\$ 145,050,650	\$ 145,050,650	\$ -	Committed per SFMTAB approval of SFMTA revenue bond series 2013, 2014 and 2017
TIRCP	\$ 113,140,000	\$ 113,140,000	\$ -	Committed per California Transportation Commission Master Agreement No. 64SFMTAMA
Educational Revenue Augmentation Fund (ERAF)	\$ 19,247,904	\$ 19,247,904	\$ -	Committed per City and County of San Francisco Ordinance 34-19, approved 2/26/19
Central Subway	\$ 16,800,000	\$ 16,800,000	\$ -	Committed/fully expended (\$10.08 million in FTA funds, \$6.72 million in PTMISEA funds)
Other - FTA §5307 (Old FTA transfer)	\$ 10,227,539	\$ 10,227,539	\$ -	Fully expended. See MTC Funding section above.
SFMTA Operating	\$ 8,000,000	\$ 8,000,000	\$ -	Committed/ fully expended
Educational Revenue Augmentation Fund (ERAF) Backfill	\$ 20,459,409	\$ 19,000,000	\$ (1,459,409)	See attached letter from Leo Levenson, dated 3/19/2019, stating that these funds are committed to the project. SFMTA will determine an SFMTA controlled fund source (e.g. Transportation Sustainability Fee, General Fund, MTA Operating) before the SFMTA Board approves the contract modifications to accelerate procurement, anticipated March 2020.
<b>SFMTA Subtotal</b>	<b>\$ 526,846,286</b>	<b>\$ 530,473,819</b>	<b>\$ 3,627,533</b>	
<b>Total Funding</b>	<b>\$ 1,112,450,192</b>	<b>\$ 1,126,960,330</b>	<b>\$ 14,510,138</b>	The SFMTA will bear \$5.9 M of the increased cost and MTC will bear \$8.5 M from the Transit Capital Priorities program (which includes FTA and AB 664 Bridge Toll match).

Expenditure Plan	Amount
EP 15	\$96,661
EP 17M	\$50,089,416
EP 17U	\$10,545,950
<b>TOTAL</b>	<b>\$60,732,027</b>

<sup>1</sup> Current allocation includes Prop K 5YPP Funding as follows:

<sup>2</sup> If RM3 does not clear remaining legal hurdles, SFMTA is responsible for identifying an alternate fund source.

REPLACEMENT	Local / MTC Split (75% MTC Max)	
	Amounts	Percentage
LRVs		
Local (non-TCP)	\$ 198,828,835	25.0%
MTC (TCP)	\$ 596,486,511	75.0%
<b>Total</b>	<b>\$ 795,315,346</b>	<b>100.0%</b>

*This is consistent with MTC Res 4123 commitment to bear 75% of replacement car cost.*

March 19, 2019

Tilly Chang, Executive Director  
San Francisco County Transportation Authority  
1455 Market St., 22<sup>nd</sup> Floor  
San Francisco, CA 94103

**RE: Light Rail Vehicle Procurement: Allocation Request and Funding Commitment**

Dear Ms. Chang,

On February 5, 2019, the San Francisco Municipal Transportation Agency (SFMTA) Board of Directors supported a supplemental appropriation to the SFMTA Capital Budget to fund the acceleration of the purchase of Light Rail Vehicles (LRVs) for the Muni Transit Fleet.

Subsequently on February 25, 2019, the SFMTA submitted an Allocation Request Form (ARF) to the San Francisco County Transportation Authority (SFCTA) to allocate \$62.8 million in Proposition K sales tax dollars for LRVs. As part of the ARF submittal, SFMTA included the full funding plan for the accelerated project of \$1.1 billion including \$20.5 million in planned SFMTA controlled funds.

This letter serves as SFMTA's commitment to fully fund the project, including the \$20.5 million. The source of those funds may include Transit Sustainability Fee revenues, future General Fund SFMTA baseline transfer as a result of extra property tax the City is receiving due to reaching an Educational Revenue Augmentation Fund (ERAF) formula cap, or another source subject to approval of the SFMTA Board of Directors.

Further, the Federal Transit Administration (FTA) formula funds originally anticipated to fund the project may not be available in time to meet the project's cash flow needs. Regional Measure 3 funds are planned to be used to bridge those cash flow gaps, beginning in 2022. In the event Regional Measure 3 funds are not available, financing against federal funds will be required. SFMTA and the Metropolitan Transportation Commission (MTC) have agreed to request a letter of no prejudice against future federal funds in order to allow either MTC or SFMTA to finance against the FTA formula funds.

We look forward to working with the SFCTA and other project partners to deliver this project.

Sincerely,

*Leo Levenson*  
Leo Levenson  
Chief Financial Officer

cc: Jonathan Rewers, Senior Manager, Budget, Financial Planning and Analysis

## COST SUMMARY

Phase	Total Cost	Prop K - Current Request	Source of Cost Estimate
Planning/Conceptual Engineering	\$0	\$0	
Environmental Studies (PA&ED)	\$0	\$0	
Right of Way	\$0	\$0	
Design Engineering (PS&E)	\$0	\$0	
Construction (CON)	\$1,126,960,331	\$60,732,027	negotiated contract with vendor + engineer's estimate
Operations	\$0	\$0	
<b>Total:</b>	\$1,126,960,331	\$60,732,027	

<b>% Complete of Design:</b>	100.0%
<b>As of Date:</b>	09/30/2014
<b>Expected Useful Life:</b>	25 Years

**SFMTA LRV Procurement - Funding and Cashflow**  
**151 Replacement & 68 Expansion LRVs**

Expenses	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	Total
68 Expansion	8,290,038	52,955,713	170,916,599	39,143,877	59,764,468	-	574,288	-	-	-	-	331,644,983
151 Replacement	6,568,322	15,696,363	5,633,420	19,905,041	29,522,756	100,580,220	116,331,020	118,291,332	147,829,822	155,609,307	79,347,744	795,315,348
<b>Total</b>	<b>14,858,360</b>	<b>68,652,076</b>	<b>176,550,019</b>	<b>59,048,918</b>	<b>89,287,224</b>	<b>100,580,220</b>	<b>116,905,308</b>	<b>118,291,332</b>	<b>147,829,822</b>	<b>155,609,307</b>	<b>79,347,744</b>	<b>1,126,960,331</b>
<b>Cum. Expenses</b>	<b>14,858,360</b>	<b>83,510,436</b>	<b>260,060,455</b>	<b>319,109,373</b>	<b>408,396,597</b>	<b>508,976,817</b>	<b>625,882,125</b>	<b>744,173,457</b>	<b>892,003,279</b>	<b>1,047,612,587</b>	<b>1,126,960,331</b>	

Revenues	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	Total
<b>MTC</b>												
FTA Formula	-	-	-	-	13,220,000	-	113,635,101	67,336,982	89,571,273	153,537,174	79,347,744	516,648,275
RM3/FTA Swap	-	-	-	-	-	-	-	-	-	-	-	-
Bridge Tolls	-	-	-	59,118,014	-	20,720,222	-	-	-	-	-	79,838,236
Fund Exchange	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total MTC</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>59,118,014</b>	<b>13,220,000</b>	<b>20,720,222</b>	<b>113,635,101</b>	<b>67,336,982</b>	<b>89,571,273</b>	<b>153,537,174</b>	<b>79,347,744</b>	<b>596,486,511</b>

<b>SFMTA</b>												
Prop K (151 replacement vehicles)	-	-	-	-	-	72,737,442	9,271,657	46,988,501	58,161,888	36,532	-	187,196,020
Rev Bond	15,725,564	11,512,539	117,812,547	-	-	-	-	-	-	-	-	145,050,650
CCSF - ERAF	-	-	-	19,247,904	-	-	-	-	-	-	-	19,247,904
Prop K (68 expansion vehicles)	-	3,092,490	1,500,000	-	-	-	96,661	-	-	-	-	4,689,151
Central Subway	-	-	13,000,000	3,800,000	-	-	-	-	-	-	-	16,800,000
Operating	8,000,000	-	-	-	-	-	-	-	-	-	-	8,000,000
Other - FTA 53307	10,227,539	-	-	-	-	-	-	-	-	-	-	10,227,539
TIRCP	41,181,000	-	45,092,000	26,867,000	-	-	-	-	-	-	-	113,140,000
RM3	-	-	-	-	-	7,122,556	-	-	-	-	-	7,122,556
ERAF Backfill	-	-	-	-	19,000,000	-	-	-	-	-	-	19,000,000
<b>Total SFMTA</b>	<b>75,134,103</b>	<b>14,605,029</b>	<b>177,404,547</b>	<b>49,914,904</b>	<b>19,000,000</b>	<b>79,859,998</b>	<b>9,368,318</b>	<b>46,988,501</b>	<b>58,161,888</b>	<b>36,532</b>	<b>-</b>	<b>530,473,820</b>
<b>Total Funding</b>	<b>75,134,103</b>	<b>14,605,029</b>	<b>177,404,547</b>	<b>109,032,918</b>	<b>32,220,000</b>	<b>100,580,220</b>	<b>123,003,419</b>	<b>114,325,483</b>	<b>147,733,161</b>	<b>153,573,706</b>	<b>79,347,744</b>	<b>1,126,960,331</b>

<b>Cumulative Revenues</b>	<b>75,134,103</b>	<b>89,739,132</b>	<b>267,143,679</b>	<b>376,176,597</b>	<b>408,396,597</b>	<b>508,976,817</b>	<b>631,980,236</b>	<b>746,305,719</b>	<b>894,038,880</b>	<b>1,047,612,587</b>	<b>1,126,960,331</b>	
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Annual Balance	60,275,743	(54,047,047)	854,528	49,984,000	(57,067,224)	-	6,098,111	(3,965,849)	(96,661)	(2,035,601)	-	-
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Cum. Balance	60,275,743	6,228,696	7,083,224	57,067,224	-	-	6,098,111	2,132,262	2,035,601	(0)	(0)	(0)
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<b>Unfunded Need</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(0)</b>	<b>(0)</b>	<b>(0)</b>
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Green highlighted: Prop K cash flow as revised per proposed Strategic Plan amendment

**MAJOR LINE ITEM BUDGET FEBRUARY 10, 2020**  
**Light Rail Vehicle Procurement - 151 LRVs Replacement and 68 Expansion**

REPLACEMENT VEHICLES (151 LRVs)	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Contract Payment Schedule	\$ -	\$ -	\$ -	\$ -	\$ 10,000,000	\$ 25,249,803	\$ 71,183,020	\$ 94,529,930	\$ 97,806,224	\$ 122,750,800	\$ 127,858,314	\$ 63,723,745	\$ 613,101,837
Project Development Cost Share* (219)	\$ 174,849	\$ 6,393,473	\$ 15,696,363	\$ 3,491,927	\$ 8,680,041	\$ 831,096	\$ -	\$ 1,175,352	\$ -	\$ -	\$ -	\$ -	\$ 36,443,101
Project Development Cost Share~ (175)	\$ -	\$ -	\$ -	\$ 2,141,493	\$ -	\$ 348,756	\$ 14,064,123	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 16,554,372
<b>Contract Subtotal</b>	\$ 174,849	\$ 6,393,473	\$ 15,696,363	\$ 5,633,420	\$ 18,680,041	\$ 26,429,655	\$ 85,247,143	\$ 95,705,282	\$ 97,806,224	\$ 122,750,800	\$ 127,858,314	\$ 63,723,745	\$ 666,099,310
Other Costs													
Support Costs (7.5%)*	\$ -	\$ -	\$ -	\$ -	\$ 725,000	\$ 1,830,611	\$ 6,138,753	\$ 6,797,118	\$ 6,921,963	\$ 8,600,435	\$ 8,933,355	\$ 4,461,129	\$ 44,408,364
Taxes (8.75%)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,960,701	\$ 9,140,952	\$ 8,789,377	\$ 10,547,252	\$ 12,656,703	\$ 8,086,227	\$ 54,181,212
Contingency (5%)	\$ -	\$ -	\$ -	\$ -	\$ 500,000	\$ 1,262,490	\$ 4,233,623	\$ 4,687,668	\$ 4,773,768	\$ 5,931,335	\$ 6,160,935	\$ 3,076,641	\$ 30,626,460
<b>Other Costs Subtotal</b>	\$ -	\$ -	\$ -	\$ -	\$ 1,225,000	\$ 3,093,101	\$ 15,333,077	\$ 20,625,738	\$ 20,485,108	\$ 25,079,022	\$ 27,750,993	\$ 15,623,997	\$ 129,216,036
<b>Cash Need (Grand Total)</b>	\$ 174,849	\$ 6,393,473	\$ 15,696,363	\$ 5,633,420	\$ 19,905,041	\$ 29,522,756	\$ 100,580,220	\$ 116,331,020	\$ 118,291,332	\$ 147,829,822	\$ 155,609,307	\$ 79,347,742	\$ 795,315,346

Tentative LRV Delivery Schedule\*\* 15 26 32 25 36 32 17 151 LRVs

EXPANSION VEHICLES (68 LRVs)	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Contract Payment Schedule	\$ 3,764,038	\$ 427,650	\$ 39,588,455	\$ 148,714,904	\$ 32,168,414	\$ 54,337,701	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 279,001,162
Project Development Cost Share* (219)	\$ 233,132	\$ 2,879,180	\$ 7,068,561	\$ 1,572,523	\$ 3,908,892	\$ 655,306	\$ -	\$ 529,298	\$ -	\$ -	\$ -	\$ -	\$ 16,846,892
Project Development Cost Share~ (175)	\$ -	\$ -	\$ -	\$ 340,370	\$ -	\$ 97,055	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 437,425
<b>Contract Subtotal</b>	\$ 3,997,170	\$ 3,306,830	\$ 46,657,016	\$ 150,627,797	\$ 36,077,306	\$ 55,090,062	\$ -	\$ 529,298	\$ -	\$ -	\$ -	\$ -	\$ 296,285,479
Other Costs													
Support Costs (7.5%)*	\$ 199,858	\$ 165,341	\$ 2,332,851	\$ 7,514,371	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,212,421
Taxes (8.75%)	\$ 339,759	\$ 281,080	\$ 3,965,846	\$ 12,774,431	\$ 3,066,571	\$ 4,674,406	\$ -	\$ 44,990	\$ -	\$ -	\$ -	\$ -	\$ 25,147,083
Contingency (5%)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Other Costs Subtotal</b>	\$ 539,617	\$ 446,421	\$ 6,298,697	\$ 20,288,802	\$ 3,066,571	\$ 4,674,406	\$ -	\$ 44,990	\$ -	\$ -	\$ -	\$ -	\$ 35,359,504
<b>Cash Need (Grand Total)</b>	\$ 4,536,787	\$ 3,753,251	\$ 52,955,713	\$ 170,916,599	\$ 39,143,877	\$ 59,764,468	\$ -	\$ 574,288	\$ -	\$ -	\$ -	\$ -	\$ 331,644,983

LRV Delivery Schedule 1 27 40 68 LRVs

<b>Total Net Cash Flow*</b>	\$ 4,711,636	\$ 10,146,724	\$ 68,652,076	\$ 176,550,019	\$ 59,048,918	\$ 89,287,224	\$ 100,580,220	\$ 116,905,308	\$ 147,829,822	\$ 155,609,307	\$ 79,347,742	\$ -	\$ 1,126,960,329
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\*Positive total net cash flow indicates expected savings

# San Francisco County Transportation Authority Prop K/Prop AA Allocation Request Form

147

<b>FY of Allocation Action:</b>	FY2019/20
<b>Project Name:</b>	Light Rail Vehicle Procurement
<b>Grant Recipient:</b>	San Francisco Municipal Transportation Agency

## SFCTA RECOMMENDATION

Resolution Number:		Resolution Date:	
Total Prop K Requested:	\$60,732,027	Total Prop AA Requested:	\$0
Total Prop K Recommended:	\$60,732,027	Total Prop AA Recommended:	\$0

## SFCTA RECOMMENDATION

SGA Project Number:	117-910abc	Name:	Light Rail Vehicle Procurement - EP-17M
Sponsor:		Expiration Date:	12/31/2026
Phase:	Construction	Fundshare:	17.02

### Cash Flow Distribution Schedule by Fiscal Year

Fund Source	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24 +	Total
PROP K EP-117M	\$0	\$0	\$17,183,425	\$0	\$0	\$32,905,991	\$50,089,416

### Deliverables

1. By September 1, 2020 SFMTA will provide a plan describing the preventative maintenance program for the Siemens light rail vehicles procured in Phases 1 and 2. This plan will address replacement of components or sub-components that will need to occur in advance of the vehicle's midlife overhaul, including cost and schedule. The preventative maintenance plan shall meet or exceed the original equipment manufacturer specifications outlined by Siemens. The plan will identify replacement parts with a long lead time for procurement and will provide the estimated lead time.

### Special Conditions

1. Recommended allocation is contingent on an amendment to the Prop K Strategic Plan and 5-Year Prioritization Program to advance \$17,183,425 in cash flow from FY2021/22 to FY2020/21 in the Vehicles – Muni category. See attached Strategic Plan amendment for details. See Attachment 1: Strategic Plan and 5YPP Amendments for details.
2. Reimbursement of the first \$31,457,114 in Prop K funds is conditioned upon the Phase 1 vehicles passing the Reliability Demonstration Test that demonstrates 25,000-miles Mean Distance Between Failures for a period of 6 consecutive months. See Attachment 2: SFMTA LRV4 Mean Distance Between Failures.
3. The recommendation is conditioned upon implementation of the attached Project Management Oversight Protocol for Siemens Light Rail Vehicle Procurement (Attachment 3), as funded by the subject request and previous Prop K allocations (SGAs 115-910002, 117-910054 and 117-910055).
4. The recommended allocation is contingent upon a commitment by the SFMTA to ensuring that warranty repairs and requirements of Contract Modifications 5-7 (covering the modifications for safety, design and performance) are included in Phase 2 vehicles.
5. Monthly progress reports may be calendared on a regular basis on the Transportation Authority Board and/or CAC meeting agendas, at the discretion of the Board Chair and Executive Director. Project updates may be consent items or discussion items with presentation by SFMTA staff. In either case SFMTA staff shall be in attendance to present or answer questions from Board and CAC members, if requested.
6. The recommended allocation is contingent upon a commitment by the SFMTA to maintain the 219 LRVs in a state of good repair, including a mid-life overhaul program providing that funding is available to allow them to meet expectations for their useful lives per FTA guidelines.
7. The Transportation Authority will only reimburse SFMTA up to the approved overhead multiplier rate for the fiscal year that SFMTA incurs charges.

### Notes

1. Funds from the Vehicles-Muni category (EP-17M) are eligible only for purchase of replacement transit vehicles.



SGA Project Number:		Name:	Light Rail Vehicle Procurement - EP-17U
Sponsor:	San Francisco Municipal Transportation Agency	Expiration Date:	12/31/2026
Phase:	Construction	Fundshare:	17.02

**Cash Flow Distribution Schedule by Fiscal Year**

Fund Source	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	Total
PROP K EP-117U	\$0	\$0	\$3,965,843	\$0	\$6,580,107	\$10,545,950

**Deliverables**

1. See Deliverable 1 for Light Rail Vehicle Procurement - EP-17M (SGA 117-910abc)

**Special Conditions**

1. Recommended allocation is contingent on an amendment to the Prop K Strategic Plan and 5-Year Prioritization Program to advance \$3,965,843 in cash flow from FY2022/23 to FY2020/21 in the Vehicles – Undesignated category. See attached Strategic Plan amendment for details.

2 - 7: See Special Conditions 2 – 7 for Light Rail Vehicle Procurement – EP-17M (SGA 117-910abc)

**Notes**

1. Funds from the Vehicles-Undesignated category (EP-17U) are eligible only for purchase of replacement transit vehicles. Any project cost savings will be returned to the Vehicles-Undesignated category for future allocation.

SGA Project Number:		Name:	Light Rail Vehicle Procurement - EP-15
Sponsor:	San Francisco Municipal Transportation Agency	Expiration Date:	12/31/2023
Phase:		Fundshare:	17.02

**Cash Flow Distribution Schedule by Fiscal Year**

Fund Source	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2024/25 +	Total
PROP K EP-115	\$0	\$0	\$0	\$96,661	\$0	\$0	\$96,661

**Deliverables**

1. See Deliverable 1 for SGA 117-910abc

**Special Conditions**

1. Recommended allocation is contingent on an amendment to the Prop K Strategic Plan and 5-Year Prioritization Program to advance \$96,661 in cash flow from FY2023/24 to FY2021/22 in the Purchase Additional Light Rail Vehicles category. See attached Strategic Plan amendment for details.

2 - 7: See Special Conditions 2 - 7 for Light Rail Vehicle Procurement - EP-17M (SGA 117-910abc)

**Notes**

1. Funds from the Purchase Additional Light Rail Vehicles (EP-15) category are eligible only for purchase of vehicles for the expansion of SFMTA's transit fleet.

Metric	Prop K	Prop AA
Actual Leveraging - Current Request	0.0%	No Prop AA
Actual Leveraging - This Project	82.97%	No Prop AA

# San Francisco County Transportation Authority Prop K/Prop AA Allocation Request Form

151

<b>FY of Allocation Action:</b>	FY2019/20
<b>Project Name:</b>	Light Rail Vehicle Procurement
<b>Grant Recipient:</b>	San Francisco Municipal Transportation Agency

## EXPENDITURE PLAN INFORMATION

<b>Current Prop K Request:</b>	\$60,732,027
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1) The requested sales tax and/or vehicle registration fee revenues will be used to supplement and under no circumstance replace existing local revenues used for transportation purposes.

Initials of sponsor staff member verifying the above statement
JCG

## CONTACT INFORMATION

	Project Manager	Grants Manager
<b>Name:</b>	Janet Gallegos	Joel C Goldberg
<b>Title:</b>	Project Manager	Grants Procurement Manager
<b>Phone:</b>	(415) 579-9791	(415) 646-2520
<b>Email:</b>	janet.gallegos@sfmta.com	joel.goldberg@sfmta.com

2019 Prop K Strategic Plan  
Attachment 1a: Proposed Amendment 4  
Programming and Finance Costs Over the Life of the Expenditure Plan

Approved (as Amended)

EP No.	EP Line Item	Total Available Funds	Percent of Available Funds Spent on Financing	Total Programming & Finance Costs	FY2018/19	FY2019/20	FY2020/21	FY2021/22	FY2022/23	FY2023/24
15	Purchase Additional Light Rail Vehicles	\$ 5,677,512	14.83%	Programming	\$ -	\$ 96,661	\$ -	\$ -	\$ -	\$ -
				Finance Costs	\$ 842,227	\$ 61,143	\$ 77,691	\$ 71,079	\$ 65,342	\$ 84,845
				Total	\$ 5,537,199	\$ 61,143	\$ 77,691	\$ 71,079	\$ 65,342	\$ 84,845
17M	New and Renovated Vehicles-MUNI	\$ 475,013,647	13.01%	Programming	\$ 411,420,696	\$ 56,616,219	\$ -	\$ 3,304,749	\$ -	\$ -
				Finance Costs	\$ 61,811,286	\$ 4,291,656	\$ 4,665,755	\$ 5,098,603	\$ 4,639,231	\$ 7,248,296
				Total	\$ 473,231,982	\$ 60,907,875	\$ 4,665,755	\$ 8,403,352	\$ 4,639,231	\$ 7,248,296
17U	New and Renovated Vehicles-Discretionary	\$ 84,833,275	9.03%	Programming	\$ 76,990,293	\$ -	\$ -	\$ -	\$ -	\$ -
				Finance Costs	\$ 7,662,760	\$ -	\$ -	\$ -	\$ 153,367	\$ 1,327,124
				Total	\$ 84,653,053	\$ -	\$ -	\$ -	\$ 153,367	\$ 1,327,124

Proposed Amendment 4

EP No.	EP Line Item	Total Available Funds	Percent of Available Funds Spent on Financing	Total Programming & Finance Costs	FY2018/19	FY2019/20	FY2020/21	FY2021/22	FY2022/23	FY2023/24
15	Purchase Additional Light Rail Vehicles	\$ 5,678,874	15.35%	Programming	\$ -	\$ 96,661	\$ -	\$ -	\$ -	\$ -
				Finance Costs	\$ 871,842	\$ 92,768	\$ 76,155	\$ 72,337	\$ 93,491	\$ 77,684
				Total	\$ 5,566,814	\$ 189,429	\$ 76,155	\$ 72,337	\$ 93,491	\$ 77,684
17M	New and Renovated Vehicles-MUNI	\$ 475,127,651	13.14%	Programming	\$ 411,420,696	\$ 56,616,219	\$ -	\$ 3,304,749	\$ -	\$ -
				Finance Costs	\$ 62,432,775	\$ 3,392,605	\$ 5,204,154	\$ 4,924,625	\$ 6,265,055	\$ 6,581,147
				Total	\$ 473,853,471	\$ 60,008,824	\$ 5,204,154	\$ 8,229,374	\$ 6,265,055	\$ 6,581,147
17U	New and Renovated Vehicles-Discretionary	\$ 84,853,635	8.89%	Programming	\$ 76,990,293	\$ -	\$ -	\$ -	\$ -	\$ -
				Finance Costs	\$ 7,544,092	\$ -	\$ -	\$ -	\$ 209,171	\$ 1,198,461
				Total	\$ 84,534,385	\$ -	\$ -	\$ -	\$ 209,171	\$ 1,198,461

2019 Prop K Strategic Plan  
Proposed Amendment 4  
Programming and Finance Costs Over the Life of the Expenditure Plan

Change																
EP No.	EP Line Item	Total Available Funds	Percent of Available Funds Spent on Financing	Total Programming & Finance Costs	FY2018/19	FY2019/20	FY2020/21	FY2021/22	FY2022/23	FY2023/24						
15	Purchase Additional Light Rail Vehicles	\$ 1,363	0.52%	<table border="1"> <tr> <td>Programming</td> <td>\$ -</td> </tr> <tr> <td>Finance Costs</td> <td>\$ 29,615</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$ 29,615</b></td> </tr> </table>	Programming	\$ -	Finance Costs	\$ 29,615	<b>Total</b>	<b>\$ 29,615</b>	-	-\$ (739)	-\$ (1,536)	-\$ 1,258	-\$ 28,149	-\$ (7,161)
Programming	\$ -															
Finance Costs	\$ 29,615															
<b>Total</b>	<b>\$ 29,615</b>															
17M	New and Renovated Vehicles-MUNI	\$ 114,005	0.13%	<table border="1"> <tr> <td>Programming</td> <td>\$ -</td> </tr> <tr> <td>Finance Costs</td> <td>\$ 621,489</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$ 621,489</b></td> </tr> </table>	Programming	\$ -	Finance Costs	\$ 621,489	<b>Total</b>	<b>\$ 621,489</b>	-	-\$ (899,051)	\$ 538,399	-\$ (173,978)	\$ 1,625,824	-\$ (667,149)
Programming	\$ -															
Finance Costs	\$ 621,489															
<b>Total</b>	<b>\$ 621,489</b>															
17U	New and Renovated Vehicles-Discretionary	\$ 20,360	-0.14%	<table border="1"> <tr> <td>Programming</td> <td>\$ -</td> </tr> <tr> <td>Finance Costs</td> <td>\$ (118,668)</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$ (118,668)</b></td> </tr> </table>	Programming	\$ -	Finance Costs	\$ (118,668)	<b>Total</b>	<b>\$ (118,668)</b>	-	-\$ -	-\$ -	-\$ -	\$ 55,805	-\$ (128,663)
Programming	\$ -															
Finance Costs	\$ (118,668)															
<b>Total</b>	<b>\$ (118,668)</b>															

Total Available Funds	Total Programming & Finance Costs
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<b>TOTAL STRATEGIC PLAN - Approved (as Amended)</b>	<table border="1"> <tr> <td>Programming</td> <td>\$ 2,476,995,707</td> </tr> <tr> <td>Finance Costs</td> <td>\$ 257,916,896</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$ 2,734,912,603</b></td> </tr> </table>	Programming	\$ 2,476,995,707	Finance Costs	\$ 257,916,896	<b>Total</b>	<b>\$ 2,734,912,603</b>	9.23%	\$ 2,793,550,460
Programming	\$ 2,476,995,707								
Finance Costs	\$ 257,916,896								
<b>Total</b>	<b>\$ 2,734,912,603</b>								

<b>TOTAL STRATEGIC PLAN - as Proposed</b>	<table border="1"> <tr> <td>Programming</td> <td>\$ 2,476,995,707</td> </tr> <tr> <td>Finance Costs</td> <td>\$ 263,248,357</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$ 2,740,244,064</b></td> </tr> </table>	Programming	\$ 2,476,995,707	Finance Costs	\$ 263,248,357	<b>Total</b>	<b>\$ 2,740,244,064</b>	9.42%	\$ 2,794,160,046
Programming	\$ 2,476,995,707								
Finance Costs	\$ 263,248,357								
<b>Total</b>	<b>\$ 2,740,244,064</b>								

<b>TOTAL STRATEGIC PLAN - Change</b>	<table border="1"> <tr> <td>Programming</td> <td>\$ -</td> </tr> <tr> <td>Finance Costs</td> <td>\$ 5,331,461</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$ 5,331,461</b></td> </tr> </table>	Programming	\$ -	Finance Costs	\$ 5,331,461	<b>Total</b>	<b>\$ 5,331,461</b>	0.1888%	\$ 609,586
Programming	\$ -								
Finance Costs	\$ 5,331,461								
<b>Total</b>	<b>\$ 5,331,461</b>								

2019 Prop K Strategic Plan  
Proposed Amendment 4  
Programming and Finance Costs Over the Life of the Expenditure Plan

Approved (as Amended)

EP No.	EP Line Item	FY2024/25	FY2025/26	FY2026/27	FY2027/28	FY2028/29	FY2029/30	FY2030/31	FY2031/32	FY2032/33	FY2033/34
15	Purchase Additional Light Rail Vehicles	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		\$ 72,733	\$ 65,641	\$ 58,820	\$ 51,683	\$ 44,193	\$ 36,521	\$ 26,127	\$ 13,096	\$ -	\$ -
		\$ 72,733	\$ 65,641	\$ 58,820	\$ 51,683	\$ 44,193	\$ 36,521	\$ 26,127	\$ 13,096	\$ -	\$ -
17M	New and Renovated Vehicles-MUNI	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		\$ 6,359,283	\$ 5,790,963	\$ 5,251,258	\$ 4,676,948	\$ 4,082,078	\$ 3,503,007	\$ 2,726,016	\$ 1,917,384	\$ -	\$ -
		\$ 6,359,283	\$ 5,790,963	\$ 5,251,258	\$ 4,676,948	\$ 4,082,078	\$ 3,503,007	\$ 2,726,016	\$ 1,917,384	\$ -	\$ -
17U	New and Renovated Vehicles-Discretionary	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		\$ 1,144,513	\$ 1,040,906	\$ 942,401	\$ 840,151	\$ 734,353	\$ 631,806	\$ 494,326	\$ 353,813	\$ -	\$ -
		\$ 1,144,513	\$ 1,040,906	\$ 942,401	\$ 840,151	\$ 734,353	\$ 631,806	\$ 494,326	\$ 353,813	\$ -	\$ -

Proposed Amendment 4

EP No.	EP Line Item	FY2024/25	FY2025/26	FY2026/27	FY2027/28	FY2028/29	FY2029/30	FY2030/31	FY2031/32	FY2032/33	FY2033/34
15	Purchase Additional Light Rail Vehicles	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		\$ 71,926	\$ 65,351	\$ 59,065	\$ 52,488	\$ 45,593	\$ 38,581	\$ 28,886	\$ 16,568	\$ -	\$ -
		\$ 71,926	\$ 65,351	\$ 59,065	\$ 52,488	\$ 45,593	\$ 38,581	\$ 28,886	\$ 16,568	\$ -	\$ -
17M	New and Renovated Vehicles-MUNI	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		\$ 6,228,752	\$ 5,701,947	\$ 5,204,686	\$ 4,675,022	\$ 4,127,015	\$ 3,596,694	\$ 2,872,470	\$ 2,097,796	\$ -	\$ -
		\$ 6,228,752	\$ 5,701,947	\$ 5,204,686	\$ 4,675,022	\$ 4,127,015	\$ 3,596,694	\$ 2,872,470	\$ 2,097,796	\$ -	\$ -
17U	New and Renovated Vehicles-Discretionary	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		\$ 1,114,265	\$ 1,017,841	\$ 926,535	\$ 831,709	\$ 733,512	\$ 638,164	\$ 507,840	\$ 366,594	\$ -	\$ -
		\$ 1,114,265	\$ 1,017,841	\$ 926,535	\$ 831,709	\$ 733,512	\$ 638,164	\$ 507,840	\$ 366,594	\$ -	\$ -

**2019 Prop K Strategic Plan  
Proposed Amendment 4  
Programming and Finance Costs Over the Life of the Expenditure Plan**

Change											
EP No.	EP Line Item	FY2024/25	FY2025/26	FY2026/27	FY2027/28	FY2028/29	FY2029/30	FY2030/31	FY2031/32	FY2032/33	FY2033/34
15	Purchase Additional Light Rail Vehicles	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		\$(807)	\$(290)	\$ 245	\$ 806	\$ 1,400	\$ 2,060	\$ 2,759	\$ 3,472	\$ -	\$ -
		\$(807)	\$(290)	\$ 245	\$ 806	\$ 1,400	\$ 2,060	\$ 2,759	\$ 3,472	\$ -	\$ -
17M	New and Renovated Vehicles-MUNI	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		\$(130,531)	\$(89,016)	\$(46,572)	\$(1,926)	\$ 44,937	\$ 93,686	\$ 146,454	\$ 180,412	\$ -	\$ -
		\$(130,531)	\$(89,016)	\$(46,572)	\$(1,926)	\$ 44,937	\$ 93,686	\$ 146,454	\$ 180,412	\$ -	\$ -
17U	New and Renovated Vehicles-Discretionary	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		\$(30,249)	\$(23,065)	\$(15,867)	\$(8,442)	\$(840)	\$ 6,358	\$ 13,515	\$ 12,781	\$ -	\$ -
		\$(30,249)	\$(23,065)	\$(15,867)	\$(8,442)	\$(840)	\$ 6,358	\$ 13,515	\$ 12,781	\$ -	\$ -

**Attachment 1b: 3 5YPP Amendments**  
**2019 Prop K 5-Year Project List (FY 2019/20 - FY 2023/24)**  
**Vehicles - Muni (EP 17M)**  
**Programming and Allocations to Date**  
 Pending March 24, 2020 Board

Agency	Project Name	Phase	Status	Fiscal Year					Total
				2019/20	2020/21	2021/22	2022/23	2023/24	
<b>Carry Forward From 2014 5YPP</b>									
SFMTA	Replace 30 30-foot Hybrid Diesel Motor Coaches <sup>2,3</sup>	CON	Programmed	\$0					\$0
SFMTA	Replace 85 40-Foot Trolley Coaches	CON	Programmed	\$7,542,844					\$7,542,844
<b>2019 5YPP Programming and Allocations</b>									
SFMTA	Rehabilitation of 5 Vintage Streetcars <sup>2</sup>	CON	Allocated	\$700,788					\$700,788
SFMTA	Transit Vehicle Replacement or Rehabilitation - Placeholder <sup>3</sup>	CON	Programmed	\$0					\$0
SFMTA	New Flyer Midlife Overhaul Phase 1 <sup>3</sup>	CON	Allocated	\$17,937,483					\$17,937,483
SFMTA	Rehabilitate Historic & Milan Streetcars	CON	Programmed		\$3,304,749				\$3,304,749
SFMTA	Placeholder - Purchase or Rehab Muni Vehicles <sup>4</sup>	ANY	Programmed	\$2,035,607					\$2,035,607
SFMTA	Light Rail Vehicle Procurement <sup>1,4</sup>	CON	Pending	\$50,089,416					\$50,089,416
<b>Total Programmed in 2019 5YPP</b>				\$78,306,138	\$3,304,749	\$0	\$0	\$0	\$81,610,887
<b>Total Allocated and Pending</b>				\$68,727,687	\$0	\$0	\$0	\$0	\$68,727,687
<b>Total Unallocated</b>				\$9,578,451	\$3,304,749	\$0	\$0	\$0	\$12,883,200
<b>Total Programmed in 2019 Strategic Plan</b>				\$78,306,138	\$3,304,749	\$0	\$0	\$0	\$81,610,887
<b>Deobligated Funds</b>				\$217,308	\$0	\$0	\$0	\$0	\$217,308
<b>Cumulative Remaining Programming Capacity</b>				\$217,308	\$217,308	\$217,308	\$217,308	\$217,308	\$217,308

Pending Allocation/Appropriation  
 Board Approved Allocation/Appropriation



**FOOTNOTES:**

- <sup>1</sup> Deobligation of SGA 117-910055 is required to allocate LRV funds as programmed. EP-17 funds may be used for replacement vehicles only.
- <sup>2</sup> 5YPP amendment to accommodate allocation of \$700,788 for Rehabilitation of 5 Vintage Streetcars (Resolution 20-003, 7/23/2019):  
 Replace 30 30-foot Hybrid Diesel Motor Coaches: Reduced by \$700,788 in FY2018/19. SFMTA has deferred the project by at least two years.  
 Rehabilitation of 5 Vintage Streetcars: Added project with \$700,788 in FY2019/20.
- <sup>3</sup> To accommodate allocation of \$17,937,483 for New Flyer Midlife Overhaul Phase 1 (Resolution 20-009, 09/24/2019):  
 Replace 30 30-foot Hybrid Diesel Motor Coaches: Reduced by \$13,446,287 in FY2019/20. SFMTA has deferred the project by at least two years.  
 Transit Vehicle Replacement or Rehabilitation - Placeholder: Reduced from \$4,491,196 to \$0 in FY2019/20.  
 New Flyer Midlife Overhaul Phase 1: Added project with \$17,937,483 in FY2019/20.
- <sup>4</sup> Strategic Plan and 5YPP amendments to accommodate allocation of \$50,089,416 for Light Rail Vehicle Procurement (Resolution 20-0XX, 3/20/2021):  
 Light Rail Vehicle Procurement: Advance \$17,183,425 in cash flow from FY2021/22 to FY2020/21, reduce total amount by \$2,035,607 from FY2020/21 to FY2019/20.  
 Placeholder - Purchase or Rehab Muni Vehicles: Add placeholder with \$2,035,607 in FY2019/20 and cash flow in FY2023/24.

**2019 Prop K 5-Year Project List (FY 2019/20 - FY 2023/24)  
Vehicles - Undesignated Category (EP 17U)  
Programming and Allocations to Date**

Pending March 24, 2020 Board

Agency	Project Name	Phase	Status	Fiscal Year					Total
				2019/20	2020/21	2021/22	2022/23	2023/24	
SFMTA	Light Rail Vehicle Procurement <sup>1</sup>	CON	Pending	\$10,545,950					\$10,545,950
<b>Total Programmed in 2019 5YPP</b>				\$10,545,950	\$0	\$0	\$0	\$0	\$10,545,950
<b>Total Allocated and Pending</b>				\$10,545,950	\$0	\$0	\$0	\$0	\$10,545,950
<b>Total Unallocated</b>				\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Programmed in 2019 Strategic Plan</b>				\$10,545,950	\$0	\$0	\$0	\$0	\$10,545,950
<b>Deobligated Funds</b>				\$0	\$0	\$0	\$0	\$0	\$0
<b>Cumulative Remaining Programming Capacity</b>				\$0	\$0	\$0	\$0	\$0	\$0
Pending Allocation/Appropriation									
Board Approved Allocation/Appropriation									

**FOOTNOTES:**

<sup>1</sup> Strategic Plan and 5YPP amendments to accommodate allocation of \$10,545,950 for Light Rail Vehicle Procurement (Resolution 20-0XX, xx/xx/2020).

Light Rail Vehicle Procurement: Advance \$3,965,843 in cash flow from FY2022/23 to FY2020/21;

**2019 Prop K 5-Year Project List (FY 2019/20 - FY 2023/24)  
Purchase Additional Light Rail Vehicles (EP 15)  
Programming and Allocations to Date**

Pending March 24, 2020 Board

Agency	Project Name	Phase	Status	Fiscal Year					Total
				2019/20	2020/21	2021/22	2022/23	2023/24	
<b>Purchase Additional Light Rail Vehicles (EP 15)</b>									
SFMTA	Light Rail Vehicle Procurement <sup>2</sup>	PROC	Pending	\$96,661					\$96,661
<b>Total Programmed in 2019 5YPP</b>				\$96,661	\$0	\$0	\$0	\$0	\$96,661
<b>Total Allocated and Pending</b>				\$96,661	\$0	\$0	\$0	\$0	\$96,661
<b>Total Unallocated</b>				\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Programmed in 2019 Strategic Plan</b>				\$96,661	\$0	\$0	\$0	\$0	\$96,661
<b>Deobligated Funds</b>				\$0	\$0	\$0	\$0	\$0	\$0
<b>Cumulative Remaining Programming Capacity</b>				\$0	\$0	\$0	\$0	\$0	\$0

Pending Allocation/Appropriation  
Board Approved Allocation/Appropriation

**FOOTNOTES:**


<sup>2</sup> Strategic Plan and 5YPP amendments to the Purchase Additional Light Rail Vehicles category (EP-15) to accommodate allocation of \$96,661 for Light Rail Vehicle Procurement (Resolution 20-0XX, 3/24/2020).

Light Rail Vehicle Procurement: Advance \$96,661 in cash flow from FY2023/24 to FY2021/22; funds must be used for LRV fleet expansion, which will

# SFMTA LRV4 Program

## Funding Allocation Request

**To:** Anna Laforte, Deputy Director for Policy & Programming, SFCTA

**From:** Julie Kirschbaum, Director of Transit 

**Cc:** Jeffrey Tumlin, Director of Transportation  
Janet Gallegos, Program Delivery and Support Manager

**Date:** February 19, 2020

**Subject:** SFMTA LRV4 Mean Distance Between Failures

This memo provides a summary of the Reliability Demonstration Test requirements for the LRV4 Contract, as well as an overview of SFMTA's contract authority to hold Siemens accountable to successfully complete the Program.

- The LRV4 Technical Specification requires the fleet to achieve a Mean Distance Between (Chargeable) Train Delays of 25,000 miles.
- Chargeable delays are defined as mechanical failures that are attributable to the design of the train and related ancillary systems, such as the radio. Service failures attributable to Operator or Mechanic actions, as well as send ins related to cleanliness or no defect found are excluded from this analysis.
- This Reliability Demonstration Test is a formal deliverable (CDRL 11) in the testing program.
- The Reliability Demonstration began in August 2018, as we needed enough vehicles in service to demonstrate a *long-term stable reliability*. For this reason, it is among the last tests performed.
- Siemens must demonstrate 25,000 miles for a period of six months and rework the vehicle/repeat the test until it is achieved.
- There are no penalties for not reaching the target; however, the deliverable is not achieved until it is accomplished.
- SFMTA is holding Phase 1 retention payments pending successful completion of the Reliability Demonstration Test.
- Although we anticipate reaching this milestone sooner, SFMTA will extend the retention hold to Phase 2 vehicles if the demonstration program extends into the Breda replacement process.
- SFMTA can also choose to not accept Phase 2 vehicles if the MDBF is not achieved by that time.

A summary of the retention payments is outlined in Table 1.

# SFMTA LRV4 Program

## Funding Allocation Request

**Table 1. Summary of Retention Payments**

Payment	Percent	Amount	Description
<b>Currently Held</b>		<b>\$3,055,293</b>	
Engineering and Test Item 1D	3%	\$337,870	Completion and acceptance of vehicle performance qualification testing
Engineering and Test Item 1E	8.6%	\$840,368	Completion of acceptance of test program
Engineering and Test Item 1F	5%	\$1,877,055	Completion and acceptance of all contract requirements
<b>May be Withheld</b>		<b>\$28,401,821</b>	
Phase 1 Retention: Vehicle Punchlist	3%	\$6,787,590	Retention for each vehicle until punch list items are completed
Retention on other Phase 1 items		\$3,051,706	Retention on change orders, manuals, etc.
Phase 2 Retention: Vehicle Punchlist	3%	\$18,562,525	Retention for each vehicle until punch list items are completed
<b>Total Available Retention</b>		<b>\$31,457,114</b>	

**Attachment 3:**  
**SFCTA Project Management Oversight (PMO) Protocol**  
**for Siemens Light Rail Vehicle Procurement**

Project Management Oversight (PMO) provides a proactive dialogue with the project sponsor while analyzing progress to provide the sponsor with professional opinions and recommendations for action. A critical component is to assess the reasonableness of the scope, schedule and cost, and assess the likelihood that the cost and schedule will hold through completion or revenue service. As part of its oversight, the San Francisco County Transportation Authority (SFCTA) PMO may identify problems and suggest solutions to the project sponsor.

The oversight approach described below is predicated on the shared goal of on-time, on-budget and successful delivery of the Siemens Light Rail Vehicle Procurement project (Project) and on the desire for an approach that is integrated into the Project Management Team's procedures and protocols rather than layering on an additional layer of oversight. The SFCTA PMO is both performing a traditional oversight role and serving as a resource to the Project Management Team.

1. The SFMTA-assigned project manager shall be available to the SFCTA PMO over the course of the project, providing requested documentation and facilitating discussions with members of the project team as requested.
2. The SFMTA shall submit monthly progress reports through the SFCTA's online grants portal ([portal.sfcta.org](http://portal.sfcta.org)). Monthly progress reports shall provide percent complete for the overall project scope, the number of vehicles received, the number of vehicles placed into revenue service, and total expenses incurred (not necessarily invoiced to Prop K) during the reporting period in the previous quarter. Progress reports shall include the most recent vehicle testing and commissioning data, including procurements pursuant to the base contract and any Prop K funded contract options. These reports should be comprehensive in nature and include a detailed description of issues of concern, root cause, proposed solution and status of repair/modifications including but not limited to data on average monthly miles of service, mean distance between failures, as well as any safety, contractual, operational, warranty findings/reports, etc.
3. The SFMTA project manager shall include the SFCTA PMO in internal and external meetings as requested by the SFCTA PMO and agreed to by the project manager, including meetings with vendor, subcontractors and/or consultants.
4. If the Federal Transit Administration (FTA) assigns a PMO contractor (PMOC) to the Project, the SFCTA PMO shall be notified and invited to attend all meetings with the FTA PMOC over the course of the project.
5. At SFCTA PMO discretion, the SFCTA PMO shall:
  - a. Review progress and cost reports and provide comments.
  - b. Participate in pre- and post-delivery vehicle assessment, including review of acceptance reports.
  - c. Participate in all risk workshops and risk management meetings, when scheduled to:
    - i. assess all the items that place the Project at risk as may be included in the risk register;
    - ii. update probability ratings and cost and schedule impacts; and
    - iii. discuss the status/progress of mitigation measures and add new risks as they become evident.
  - d. Participate in all SFMTA Transportation Capital Committee meetings at which scope, schedule, and budget changes to the Project are reviewed. The SFCTA PMO shall review proposed changes in advance of their submittal to the Transportation Capital Committee and provide comment and feedback. The SFMTA project manager or his/her designee shall provide the materials to the SFCTA PMO with a reasonable amount of time for review.
  - e. Review all safety certification processes and documents produced by or for the SFMTA, the state Public Utilities Commission or the FTA.
  - f. Review the test program and have the opportunity to be present for the testing of vehicle systems.



# Memorandum

## AGENDA ITEM 12

**DATE:** February 19, 2020

**TO:** Transportation Authority Board

**FROM:** Anna LaForte - Deputy Director for Policy and Programming

**SUBJECT:** 3/10/2020 Board Meeting: Allocate \$1,000,000 in Prop K Sales Tax Funds, with Conditions, for the Mission Street Excelsior Safety Project

<p><b>RECOMMENDATION</b>   <input type="checkbox"/> Information   <input checked="" type="checkbox"/> Action</p> <p>Allocate \$1,000,000 in Prop K funds, with conditions, to the San Francisco Municipal Transportation Agency (SFMTA) for:</p> <p>1. Mission Street Excelsior Safety Project</p> <p><b>SUMMARY</b></p> <p>Attachment 1 lists the request, including requested phase and supervisorial district for the project. Attachment 2 provides a brief description of the project. Attachment 3 contains the staff recommendations.</p>	<p><input checked="" type="checkbox"/> Fund Allocation</p> <p><input type="checkbox"/> Fund Programming</p> <p><input type="checkbox"/> Policy/Legislation</p> <p><input type="checkbox"/> Plan/Study</p> <p><input type="checkbox"/> Capital Project Oversight/Delivery</p> <p><input type="checkbox"/> Budget/Finance</p> <p><input type="checkbox"/> Contract/Agreement</p> <p><input type="checkbox"/> Other:</p>
--	---

## DISCUSSION

Attachment 1 summarizes the subject allocation request, including information on proposed leveraging (i.e. stretching Prop K sales tax dollars further by matching them with other fund sources) compared with the leveraging assumptions in the Prop K Expenditure Plan. Attachment 2 includes a brief description of the project. Attachment 3 summarizes the staff recommendations for the request, highlighting special conditions and other items of interest. An Allocation Request Form for the project is attached, with more detailed information on scope, schedule, budget, funding, deliverables and special conditions.

### Future District 3 Pedestrian Safety Improvements [NTIP Capital] Request.

At the March 10 Transportation Authority Board meeting, we anticipate presenting a Prop K allocation request for approval from the SFMTA for the design and construction of a pedestrian scramble at Kearny/Jackson and opening a new crosswalk connecting the northeast and southwest corners at Columbus/Green/Stockton. These improvements were evaluated and recommended through the District 3 Neighborhood Transportation Improvement Program (NTIP) planning project, which is nearing completion. The request was not ready to be considered by the Citizens Advisory Committee on February 26 because SFMTA and Public Works are still assessing the capital project’s funding plan, as well as the schedule and whether the scope of work could implemented via a change order to the



existing John Yehall Chin Safe Routes to School construction contract. We are recommending that consideration of this request advance directly to the March Board meetings to support Chair Peskin's desire for the SFMTA to implement this pedestrian safety project as soon as possible and to facilitate potential inclusion of the work as a change order to the aforementioned contract. We have invited SFMTA staff to attend the February 26 CAC meeting to answer any questions the CAC may have about the project.

### **FINANCIAL IMPACT**

The recommended action would allocate \$1,000,000 in Prop K funds. The allocation would be subject to the Fiscal Year Cash Flow Distribution Schedule contained in the attached Allocation Request Form.

Attachment 4 shows the approved Fiscal Year 2019/20 allocations and appropriations to date, with associated annual cash flow commitments as well as the recommended allocation and cash flow amounts that are the subject of this memorandum.

Sufficient funds are included in the Fiscal Year 2019/20 budget to accommodate the recommended action. Furthermore, sufficient funds will be included in the Fiscal Year 2020/21 budget to cover the recommended cash flow distribution for that fiscal year.

### **CAC POSITION**

The CAC will consider this item at its February 26, 2020 meeting.

### **SUPPLEMENTAL MATERIALS**

- Attachment 1 - Request Summary
- Attachment 2 - Project Description
- Attachment 3 - Staff Recommendation
- Attachment 4 - Prop K Allocation Summary - FY 2019/20
- Attachment 5 - Allocation Request Form



Attachment 1: Summary of Requests Received

Source	EP Line No./Category <sup>1</sup>	Project Sponsor <sup>2</sup>	Project Name	Current Prop K Request	Total Cost for Requested Phase(s)	Leveraging			District(s)
						Expected Leveraging by EP Line <sup>3</sup>	Actual Leveraging by Project Phase(s) <sup>4</sup>	Phase(s) Requested	
Prop K	40	SFMTA	Mission Street Excelsior Safety Project	\$ 1,000,000	\$ 3,000,000	25%	67%	Design	11
<b>TOTAL</b>					<b>\$ 3,000,000</b>	<b>25%</b>	<b>67%</b>		

Footnotes

<sup>1</sup> "EP Line No./Category" is either the Prop K Expenditure Plan line number referenced in the 2019 Prop K Strategic Plan or the Prop AA Expenditure Plan category referenced in the 2017 Prop AA Strategic Plan, including: Street Repair and Reconstruction (Street), Pedestrian Safety (Ped), and Transit Reliability and Mobility Improvements (Transit).

<sup>2</sup> Acronym: SFMTA (San Francisco Municipal Transportation Agency)

<sup>3</sup> "Expected Leveraging By EP Line" is calculated by dividing the total non-Prop K funds expected to be available for a given Prop K Expenditure Plan line item (e.g. Pedestrian Circulation and Safety) by the total expected funding for that Prop K Expenditure Plan line item over the 30-year Expenditure Plan period. For example, expected leveraging of 90% indicates that on average non-Prop K funds should cover 90% of the total costs for all projects in that category, and Prop K should cover only 10%.

<sup>4</sup> "Actual Leveraging by Project Phase" is calculated by dividing the total non-Prop K or non-Prop AA funds in the funding plan by the total cost for the requested phase or phases. If the percentage in the "Actual Leveraging" column is lower than in the "Expected Leveraging" column, the request (indicated by yellow highlighting) is leveraging fewer non-Prop K dollars than assumed in the Expenditure Plan. A project that is well leveraged overall may have lower-than-expected leveraging for an individual or partial phase.

Attachment 2: Brief Project Descriptions<sup>1</sup>

EP Line No./ Category	Project Sponsor	Project Name	Prop K Funds Requested	Project Description
40	SFMTA	Mission Street Excelsior Safety Project	\$1,000,000	Pedestrian safety, transit reliability, and loading improvements on Mission Street between Geneva Avenue and Trumbull Street and on Geneva Avenue between Mission and Prague streets. The project's goals are to: increase safety for all users of the corridor, especially people who walk, bike, and take transit; improve transit reliability on the most used bus routes in the neighborhood (8 Bayshore, 14 Mission, 14R Mission Rapid, 49 Van Ness/Mission); and, enhance the business district through loading improvements. Scope includes bulb-outs, traffic signals, new pedestrian crossings, transit bulbs, transit stop improvements and changes, and loading and color curb management. Project will be implemented with a Public Works paving project. SFMTA anticipates completing design by Summer 2021.
<b>TOTAL</b>			<b>\$1,000,000</b>	

<sup>1</sup> See Attachment 1 for footnotes.

Attachment 3: Staff Recommendations<sup>1</sup>

EP Line No./ Category	Project Sponsor	Project Name	Prop K Funds Recommended	Recommendations
40	SFMTA	Mission Street Excelsior Safety Project	\$ 1,000,000	Quarterly progress reports will include updates on the status of the construction phase funding plan and efforts to secure discretionary (competitive) grants and local funds.
<b>TOTAL</b>			<b>\$1,000,000</b>	

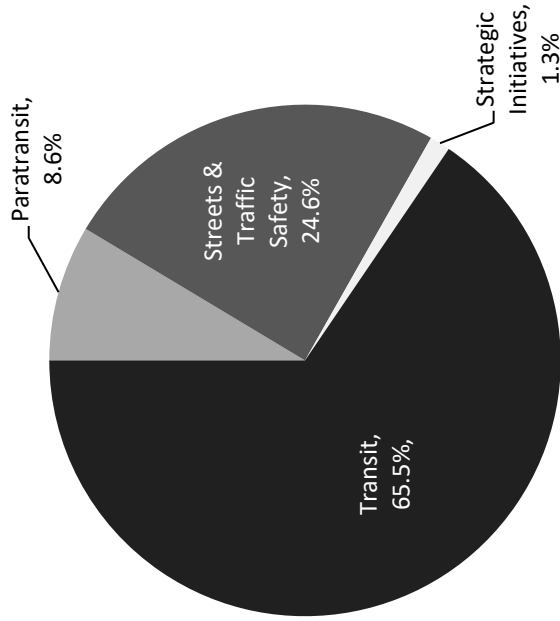
<sup>1</sup> See Attachment 1 for footnotes.

Attachment 4.  
Prop K and Prop AA Allocation Summaries - FY 2019/20

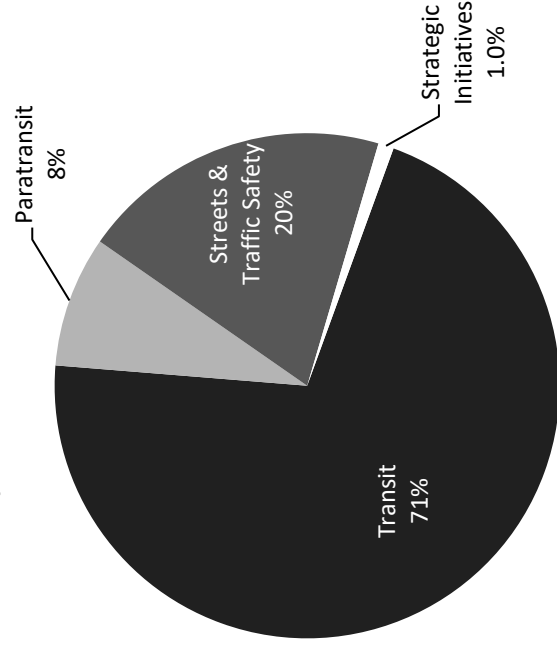
PROP K SALES TAX										
	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26			
Total										
Prior Allocations	\$ 73,288,808	\$ 33,405,981	\$ 7,281,046	\$ 3,354,622	\$ 2,690,622	\$ 2,690,622	\$ 717,500			
Current Request(s)	\$ 1,000,000	\$ 900,000	\$ -	\$ -	\$ -	\$ -	\$ -			
New Total Allocations	\$ 74,288,808	\$ 34,305,981	\$ 7,281,046	\$ 3,354,622	\$ 2,690,622	\$ 2,690,622	\$ 717,500			

The above table shows maximum annual cash flow for all FY 2019/20 allocations and appropriations approved to date, along with the current recommended allocation(s).

**Investment Commitments,  
per Prop K Expenditure Plan**



**Prop K Investments To Date**



# San Francisco County Transportation Authority

## Prop K/Prop AA Allocation Request Form

<b>FY of Allocation Action:</b>	FY2019/20
<b>Project Name:</b>	Mission Street Excelsior Safety Project
<b>Grant Recipient:</b>	San Francisco Municipal Transportation Agency

### EXPENDITURE PLAN INFORMATION

<b>Prop K EP categories:</b>	Pedestrian Circulation/Safety
<b>Current Prop K Request:</b>	\$1,000,000
<b>Supervisory District(s):</b>	District 11

### REQUEST

**Brief Project Description**

Pedestrian safety, transit reliability, and loading improvements on Mission Street between Geneva Avenue and Trumbull Street and on Geneva Avenue between Mission and Prague Streets. Project will 1) provide safer, more comfortable walking and biking environments on Mission and Geneva; 2) provide safer, more predictable driving environment on Mission and Geneva; and 3) improve transit reliability on Mission and Geneva. Scope includes bulb-outs, traffic signals, new pedestrian crossings, transit bulbs, transit stop improvements and changes, and loading and color curb management.

**Detailed Scope, Project Benefits and Community Outreach**

Mission Street and Geneva Avenue are part of San Francisco’s Vision Zero High Injury Network – the 13% of city streets where 75% of the severe and fatal collisions occur. Over the last seven years, five community members were killed and at least 323 people were injured in collisions in the project area. Additionally, on some blocks of the project corridor, the eight Muni lines that serve the area have average speeds below 5 mph. The project will seek to address these issues, while making loading improvements to support the over 300 existing storefronts along Mission and Geneva streets.

The project’s goals are to:

- \* Increase safety for all users of the corridor, especially people who walk, bike, and take transit
- \* Improve transit reliability on the most used bus routes in the neighborhood
- \* Enhance the business district through loading improvements

From late 2017 to 2018, the project team conducted outreach to better understand the issues and problems that the community faces when using Mission Street and Geneva Avenue, including one-on-one meetings, door-to-door loading surveys, participation in four Excelsior and Outer Mission Neighborhood Strategy meetings, and neighborhood walk-throughs. In late 2018 and early 2019, SFMTA hosted a series of workshops with project stakeholders to refine the conceptual plan to better reflect the community’s needs. In April 2019, the project team hosted two open houses to present the refined designs to the wider community and collected feedback that was used to create the final proposal. The project proposal was revised and approved by the SFMTA Board of Directors in September 2019.

Staff are currently designing 'quick-build' improvements – including 'painted safety zones' to improve visibility at corners, curb management enhancements, and transit stop changes – expected to begin construction in spring 2020.

The detailed design phase of the project funded with this allocation request will include design of civil improvements (bulb-outs and sidewalk extensions) and new/modified traffic signals.

Project scope:

- \* 6 new traffic signals
- \* 4 signal modifications and timing changes along corridor
- \* Up to 35 corner bulb-outs, 4 transit bulbs, and 1 transit island
- \* Visibility daylighting along corridor
- \* 3 raised crosswalks

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- \* Adjusted transit stops
- \* Curb management to support businesses
- \* Bikeway improvements (on Geneva)

**Deliverables:**

1. Traffic signal designs (pole placement and signal timing)
2. Civil designs for bulb-outs, islands, raised crosswalks, etc.
3. Striping designs for lane/curb re-configurations

All improvements (safety, transit, signal upgrades) are planned to be jointly delivered with a re-paving contract by Public Works starting in late 2021. It is possible that implementation of the project will include multiple construction phases. A task within the detailed design scope is cost estimates per element, which will inform what can be built with the initial project and what might need to be included later. If phased, transit improvements (e.g., bus bulbs), safety improvements at high-collision locations, and signal upgrades will be prioritized.

**Project Location**

Mission Street between Geneva Avenue and Trumbull Street; Geneva Avenue between Mission and Prague Streets

**Project Phase(s)**

Design Engineering (PS&E)

## 5YPP/STRATEGIC PLAN INFORMATION

<b>Type of Project in the Prop K 5YPP/Prop AA Strategic Plan?</b>	Named Project
<b>Is requested amount greater than the amount programmed in the relevant 5YPP or Strategic Plan?</b>	Less than or Equal to Programmed Amount
<b>Prop K 5YPP Amount:</b>	\$1,000,000

# San Francisco County Transportation Authority Prop K/Prop AA Allocation Request Form

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<b>FY of Allocation Action:</b>	FY2019/20
<b>Project Name:</b>	Mission Street Excelsior Safety Project
<b>Grant Recipient:</b>	San Francisco Municipal Transportation Agency

## ENVIRONMENTAL CLEARANCE

<b>Environmental Type:</b>	EIR/EIS
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## PROJECT DELIVERY MILESTONES

Phase	Start		End	
	Quarter	Calendar Year	Quarter	Calendar Year
Planning/Conceptual Engineering	Jan-Feb-Mar	2017	Jul-Aug-Sep	2019
Environmental Studies (PA&ED)	Jan-Feb-Mar	2017	Jul-Aug-Sep	2019
Right of Way				
Design Engineering (PS&E)	Oct-Nov-Dec	2019	Apr-May-Jun	2021
Advertise Construction	Jul-Aug-Sep	2021		
Start Construction (e.g. Award Contract)	Oct-Nov-Dec	2021		
Operations				
Open for Use			Oct-Nov-Dec	2022
Project Completion (means last eligible expenditure)			Jan-Feb-Mar	2023

## SCHEDULE DETAILS

Community outreach during the detailed design phase will be minimal, focused on working with stakeholders (e.g., property owners/tenants) on particular considerations/issues that arise during design. This project is being coordinated with a scheduled paving project led by Public Works; it may also coordinate with utility work – the paving scope will follow the schedule of this project.

## San Francisco County Transportation Authority Prop K/Prop AA Allocation Request Form

<b>FY of Allocation Action:</b>	FY2019/20
<b>Project Name:</b>	Mission Street Excelsior Safety Project
<b>Grant Recipient:</b>	San Francisco Municipal Transportation Agency

### FUNDING PLAN - FOR CURRENT REQUEST

Fund Source	Planned	Programmed	Allocated	Project Total
PROP K: Pedestrian Circulation/Safety	\$0	\$1,000,000	\$0	\$1,000,000
PROP B	\$600,000	\$1,400,000	\$0	\$2,000,000
<b>Phases in Current Request Total:</b>	\$600,000	\$2,400,000	\$0	\$3,000,000

### FUNDING PLAN - ENTIRE PROJECT (ALL PHASES)

Fund Source	Planned	Programmed	Allocated	Project Total
PROP K	\$0	\$1,000,000	\$0	\$1,000,000
TBD (E.G. ATP, AHSC, PROP AA, PROP K, TNC TAX)	\$17,467,000	\$0	\$0	\$17,467,000
PROP B	\$600,000	\$1,400,000	\$347,000	\$2,347,000
<b>Funding Plan for Entire Project Total:</b>	\$18,067,000	\$2,400,000	\$347,000	\$20,814,000

### COST SUMMARY

Phase	Total Cost	Prop K - Current Request	Source of Cost Estimate
Planning/Conceptual Engineering	\$347,000	\$0	SFMTA
Environmental Studies (PA&ED)	\$0	\$0	
Right of Way	\$0	\$0	
Design Engineering (PS&E)	\$3,000,000	\$1,000,000	SFMTA - based on prior similar work
Construction (CON)	\$17,467,000	\$0	SFMTA - based on prior similar work
Operations	\$0	\$0	
<b>Total:</b>	\$20,814,000	\$1,000,000	

<b>% Complete of Design:</b>	10.0%
<b>As of Date:</b>	12/18/2019
<b>Expected Useful Life:</b>	20 Years



# San Francisco County Transportation Authority

## Prop K/Prop AA Allocation Request Form

MISSION STREET - EXCELSIOR SAFETY PROJECT

### MAJOR LINE ITEM BUDGET

FUND SOURCES	
Prop K (this request)	\$ 1,000,000
Prop B (other funds)	\$ 2,000,000
<b>TOTAL PHASE</b>	<b>\$ 3,000,000</b>

SUMMARY BY MAJOR LINE ITEM - DESIGN		
Budget Line Item	Totals	% of phase
1. Total Labor	\$ 3,000,000	
2. Consultant	\$ -	
3. Other Direct Costs *		
4. Contingency		
<b>TOTAL PHASE</b>	<b>\$ 3,000,000</b>	

\* e.g. PUC costs

TOTAL LABOR COST BY AGENCY	
SFMTA	\$ 480,000
SFPW	\$ 2,520,000
<b>TOTAL</b>	<b>\$ 3,000,000</b>

# San Francisco County Transportation Authority

## Prop K/Prop AA Allocation Request Form

<b>FY of Allocation Action:</b>	FY2019/20
<b>Project Name:</b>	Mission Street Excelsior Safety Project
<b>Grant Recipient:</b>	San Francisco Municipal Transportation Agency

### SFCTA RECOMMENDATION

Resolution Number:		Resolution Date:	
Total Prop K Requested:	\$1,000,000	Total Prop AA Requested:	\$0
Total Prop K Recommended:	\$1,000,000	Total Prop AA Recommended:	\$0

SGA Project Number:		Name:	Mission Street - Excelsior Safety Project
Sponsor:	San Francisco Municipal Transportation Agency	Expiration Date:	12/31/2021
Phase:	Design Engineering	Fundshare:	

#### Cash Flow Distribution Schedule by Fiscal Year

Fund Source	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	Total
PROP K EP-140	\$100,000	\$900,000	\$0	\$0	\$0	\$1,000,000

#### Deliverables

- Quarterly progress reports shall provide updates on the status of the construction phase funding plan and efforts to secure discretionary (competitive) grants and local funds, as well as updates on the percent complete for the overall project, and all other requirements described in the Standard Grant Agreement (SGA).
- Upon project completion (anticipated by June 2021), provide evidence of completion of 100% design (e.g. copy of certifications page), as well as an updated scope, schedule, budget and funding plan (which can be met with a submittal of a Prop K allocation request for construction).

#### Special Conditions

- The Transportation Authority will only reimburse SFMTA up to the approved overhead multiplier rate for the fiscal year that SFMTA incurs charges.

Metric	Prop K	Prop AA
<b>Actual Leveraging - Current Request</b>	66.67%	No Prop AA
<b>Actual Leveraging - This Project</b>	95.2%	No Prop AA

# San Francisco County Transportation Authority Prop K/Prop AA Allocation Request Form

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<b>FY of Allocation Action:</b>	FY2019/20
<b>Project Name:</b>	Mission Street Excelsior Safety Project
<b>Grant Recipient:</b>	San Francisco Municipal Transportation Agency

## EXPENDITURE PLAN INFORMATION

<b>Current Prop K Request:</b>	\$1,000,000
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1) The requested sales tax and/or vehicle registration fee revenues will be used to supplement and under no circumstance replace existing local revenues used for transportation purposes.

Initials of sponsor staff member verifying the above statement
MD

## CONTACT INFORMATION




	Project Manager	Grants Manager
<b>Name:</b>	Mark Dreger	Mary Jarjoura
<b>Title:</b>	Planner	Principal Administrative Analyst
<b>Phone:</b>	(415) 646-2719	(415) 646-2765
<b>Email:</b>	mark.dreger@sfmta.com	mary.jarjoura@sfmta.com







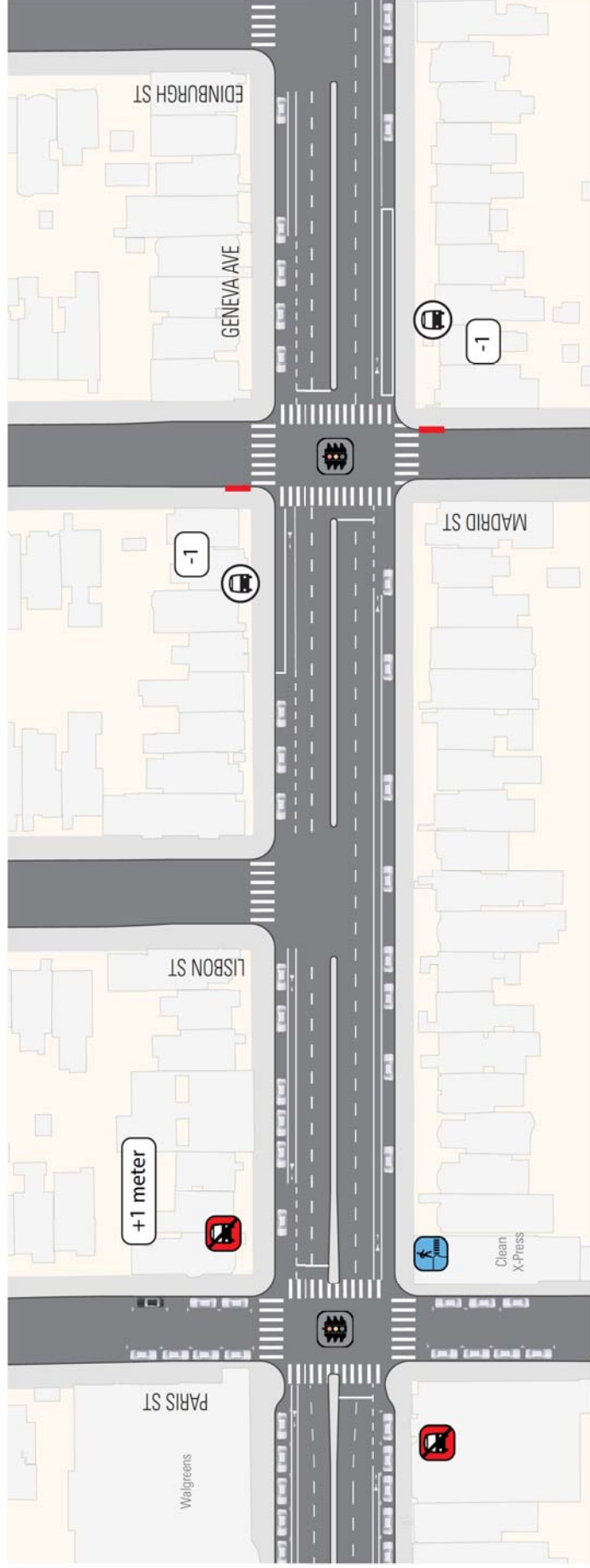


-  **Existing Traffic Signals** at Theresa St, Silver Ave, and Trumbull St
-  **Existing Stop** at Silver Ave and Trumbull St
-  **New Pedestrian Bulbs** at Theresa St, Silver Ave, Castle Manor Ave, and Admiral Ave

-  **New Traffic Signals** at Admiral Ave and Castle Manor Ave/Maynard St
-  **New Left Turn Pocket** on Mission St at Silver Ave
-  **Right Turn Only** at Ney Street

-  **New Parking Meters**
-  **New Median Island** at Trumbull St
-  **Daylighting** at Castle Manor Ave





 Existing Traffic Signals at Paris St and Madrid St

 New Pedestrian Bulbs at Paris St

 Daylighting at Madrid St

 Remove Inbound Stop at Paris St

 Remove Outbound Stop at Paris St

 Existing Stop at Madrid St

 New Parking Meters

 Existing Stop at Madrid St





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## Memorandum

### AGENDA ITEM 13

**DATE:** February 19, 2020  
**TO:** Transportation Authority Board  
**FROM:** Maria Lombardo - Chief Deputy Director  
**SUBJECT:** 3/10/2020 Board Meeting: Adopt a Support Position for the Seamless Transit Principles

<p><b>RECOMMENDATION</b>    <input type="checkbox"/> Information    <input checked="" type="checkbox"/> Action</p> <p>Adopt a support position for the Seamless Transit Principles.</p> <p><b>SUMMARY</b></p> <p>Seamless Bay Area is a non-profit organization whose mission is to transform the Bay Area’s public transit system into a world-class, unified, equitable, and widely-used system by building a diverse movement for change and promoting policy reforms. Seamless Bay Area is seeking resolutions of support for their seven Seamless Transit Principles (Attachment 1). At a high level, these principles are consistent with San Francisco’s transportation policies, particularly around transit-first and climate change goals, though we have some concerns with the details of implementation across the region’s 27 transit operators, which have very different operating and financial profiles. Seamless Bay Area is also sponsoring Assembly Bill (AB) 2057 (Chiu), which is currently a spot bill that specifies the author’s intent to put in place seamless transit reforms. We support the high level Seamless Bay Area principles with the caveat that both the task force that we understand will be proposed by AB 2057 and any subsequent Transit Network Manager have a composition that reflect where the region’s transit ridership is currently the strongest, e.g. Muni, BART and AC Transit carry 80% of all the region’s transit trips. These principles can help inform our state legislative advocacy this session (e.g. inform input on a potential regional transportation measure), as well as ongoing planning work related to Plan Bay Area 2050 and the city’s long-range transportation planning work.</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Fund Allocation</li> <li><input type="checkbox"/> Fund Programming</li> <li><input checked="" type="checkbox"/> Policy/Legislation</li> <li><input type="checkbox"/> Plan/Study</li> <li><input type="checkbox"/> Capital Project Oversight/Delivery</li> <li><input type="checkbox"/> Budget/Finance</li> <li><input type="checkbox"/> Contract/Agreement</li> <li><input type="checkbox"/> Other: _____</li> </ul>
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## **BACKGROUND**

In October-November 2019, the FASTER Bay Area and Voices for Public Transportation coalitions made presentations to the Transportation Authority Board and Citizens Advisory Committee about their proposals for potential new revenue measures for public transit in the Bay Area. The FASTER proposal, which was further along in its development, is estimated to bring as much as \$100 billion in new funding primarily for transit. Both groups are working toward a potential November 2020 ballot measure and recognize that they will need to come together to support one measure that can reach the required 2/3 voter approval threshold. Any such regional transportation revenue measure requires authorization by the State Legislature and the Governor. SB 278 (Beall) is currently the placeholder for a regional transportation revenue measure, and as of mid- February, the FASTER proponents have begun discussions with housing advocates about potentially splitting a 1-cent sales tax measure between housing and transportation projects. This conversation is ongoing, and we will continue to track SB 278's development and advocate for the measure to support San Francisco's priorities such as a regional means-based fare program, BART and Muni core capacity programs, transit operations, and other key projects such as the Downtown Caltrain Extension and US 101/I-280 Express Lanes with Bus Service.

As these revenue conversations continue, Seamless Bay Area is making a related but independent proposal to establish a state-sanctioned task force to study the Bay Area's 27 transit systems, establish policy direction and set goals to help create a more seamless network from the user's perspective, and create a Transit Network Manager role to establish leadership to coordinate between the existing transit agencies toward meeting the seamless network goals. Seamless Bay Area is sponsoring AB 2057 (Chiu), which as noted above is currently a spot bill that specifies the author's intent to put in place reforms that will make the region's transit system easier to use with a more seamless experience for transit riders.

To date, several advocacy and governmental organizations have taken actions to support the Seamless Transit Principles including SPUR, San Francisco Transit Riders, TransForm, the City of Berkeley and the Cities Association of Santa Clara County. Seamless Bay Area has made requests of numerous other city, county and transit agency boards including the San Francisco Municipal Transportation Agency (SFMTA) Board.

## **DISCUSSION**

As noted above, the Seamless Transit Principles, at a high-level, are consistent with San Francisco's Transit-First policy, climate goals, and other transportation policies and priorities. We are recommending that the Board adopt the attached resolution (Attachment 2), expressing a support position these principles with an important caveat pertaining to composition of the anticipated task force and future Transit Network Manager. We have discussed the resolution with Seam Bay Area representatives, and our Technical Working Group, which includes the SFMTA, BART, and other San Francisco and regional agencies.

Implementing a truly seamless regional transit network with so many different transit operators, is no easy task. To provide some real leadership and momentum to effect the desired changes, Seamless Bay Area has been developing a proposal for state legislation that



would form a state task force and designate a Transit Network Manager to work with the transit operators and other stakeholders to identify the needed changes, an implementation strategy, etc. We are conceptually supportive of the state task force and Transit Network Manager concepts, but will want to work with the legislature and relevant stakeholders on the details. For example, we have concerns about the governance structure for both groups. In Bay Area regional conversations, the voices of the urban core communities and large transit operators are often drowned out by suburban and ex-urban communities and small suburban transit operators. SFMTA, for example, has approximately 45% of the region's transit ridership, but may have the same vote as an agency with 4% or less of the region's ridership. Similarly, the big three cities (San Francisco, Oakland and San Jose) house approximately 30% of the Bay Area's residents, but are often outnumbered by many smaller cities and suburban communities on boards and commissions such as ABAG, where each jurisdiction is given equal footing.

Another area that should receive further discussion is the funding required to implement Seamless Bay Area's Transit Network Manager proposal. The Transit Network Manager role would require staffing and resources. More significantly, implementing uniform fare discounts and affordable fare programs such as an accumulator pass that caps the daily or monthly fare a rider pays, will necessarily impact transit operators' farebox revenues, and without assurances to help those agencies' bottom line, this proposal would face strong resistance from transit operators.

MTC is currently leading a Transit Fare Coordination and Integration study, to look at ways to make the region's transit network better coordinated, to identify practical steps toward integrating operations of the various transit agencies into a customer-focused network with a more affordable and intuitive fare structure. This process is important to help the region understand how transit fare policies are set. For example, Caltrain has 70% farebox recovery, Muni has a 29% farebox recovery ratio while AC Transit has 20% and VTA 12% (according to MTC's Vital Signs website). Furthermore, per-boarding costs vary across agencies, with AC Transit at \$5.15 and Muni at \$2.41. Setting a base fare without considering the agencies' disparate costs could have major impacts on the transit operators' ability to provide service to their customers. Changes to fares has an outsized influence on agencies that rely more heavily on farebox receipts. At the same time, these agencies are under increasing pressure to develop lifeline fares and/or pass products to help with affordability.

Finally, we understand that AB 2057 (Chiu) will include a proposal to create a base local bus fare. This idea should be approached cautiously and be guided by the findings of MTC's Transit Fare study, and by a conversation about regional values and principles. This conversation is needed to help reconcile the wide range of fare and subsidy policies in the region, for example, the importance of transit affordability. This will also help set parameters that should anchor the effort to find a solution (e.g. do no harm to existing transit operations levels by keeping budgets whole). This may mean that solutions should assume new money only, and should require matching funds be provided by a jurisdiction if existing pots of money are used. Otherwise, a base fare system could reward suburban jurisdictions for their historic lack of investment, and reduce funds to major operators whose jurisdictions' residents have been investing in transit service for years.

**Next Steps.**

We will continue to engage with our Board, transit operators, and partners as this proposal moves forward, and convey our positions to Assemblymember Chiu's office and the state legislature as AB 2057, SB 278, and other legislation that relates to these principles. Similarly, we will keep the principles in mind as we continue to provide input to Plan Bay Area 2050 and advance the Connect SF long-range transportation planning program.

**FINANCIAL IMPACT**

None. The recommended action would have no impact on the Transportation Authority's budget.

**CAC POSITION**

The CAC will consider this item at its February 26, 2020 meeting.

**SUPPLEMENTAL MATERIALS**

- Attachment 1 - Seamless Transit Principles
- Attachment 2 - Draft resolution of support

## ATTACHMENT 1

**The Seamless Transit Principles** Viewable at: [www.seamlessbayarea.org/seamless-transit-principles](http://www.seamlessbayarea.org/seamless-transit-principles)**1) Run all Bay Area transit as one easy-to-use system**

Public transit should work as one seamless, connected, and convenient network across the San Francisco Bay Area and beyond. Getting around on transit should be as fast and easy as driving a car. Coordinated bus, rail, and ferry routes and schedules should encourage effortless transfers. Consistent and clear customer information, branding, and maps should make using transit simple and dignified.

**2) Put riders first**

Riders should feel comfortable when using transit and be treated like valued customers. Public transit agencies must do more to listen to riders and continuously improve service. They must prioritize riders' needs above all else, and overcome all operational, political and bureaucratic barriers to provide an excellent and seamless customer experience.

**3) Make public transit equitable and accessible to all**

People of all income levels, ages, abilities, genders, and backgrounds should have access to world-class public transit. People who are the most reliant on transit are best served by a universal, inclusive, regionally integrated, connected system that is used by all. People with limited means to pay for transit should be provided with discounts.

**4) Align transit prices and passes to be simple, fair, and affordable**

Transit should provide good value for money. Fares across the region's 27 public transit agencies must be aligned into a consistent, fair, and affordable system that encourages using transit for all types of trips and doesn't punish riders for transferring. Cost-effective monthly passes should work across the Bay Area and should be widely available to individuals, employers, and schools.

**5) Connect effortlessly with other sustainable transportation**

A person's journey does not end when they get off a bus or exit a station. Excellent pedestrian, bicycle, and other pollution-free transportation options should seamlessly connect public transit to communities and destinations, supporting door-to-door trips that don't require a car.

**6) Plan communities and transportation together**

High quality public transit should be at the heart of communities across the Bay Area. Transportation should be closely aligned with our region's land use, promoting a connected network of transit-oriented, walkable communities that expands access to affordable housing and job opportunities, and reduces car travel and greenhouse gas emissions.

**7) Prioritize reforms to create a seamless network**

A regionally integrated, world-class transit system won't happen on its own -- it will take leadership, unprecedented levels of cooperation, and changes to existing local, regional, and state policies. The cities, counties, public transit agencies, regional authorities, business leaders, advocacy groups and elected representatives of the San Francisco Bay Area and Northern California megaregion must prioritize the broad public interest and urgently work together collaboratively to advance critical reforms. Our future depends on it!



RESOLUTION ADOPTING A SUPPORT POSITION FOR THE SEAMLESS TRANSIT PRINCIPLES

WHEREAS, The Transportation Authority 's mission is to make travel safer, healthier, and easier for all; and

WHEREAS, The San Francisco Bay Area is facing a series of interrelated crises, including increasing congestion, rising pollution, decreasing affordability, and widening inequality, which are exacerbated by an inadequate public transportation system; and

WHEREAS, There are currently 27 transit agencies operating in the Bay Area, and residents have consistently identified the lack of coordinated information and difficult transfers between operators as a barrier to increasing their use of transit; and

WHEREASE, Using public transit in the Bay Area can require using multiple transit systems operated independently, paying multiple separate fares, and navigating different wayfinding systems; and

WHEREAS, Climate change is a significant challenge facing the Bay Area, and reducing greenhouse gas emissions from the transportation sector will require a significant increase in the number of residents and workers taking transit rather than a single occupancy vehicle for more of their trips; and

WHEREAS, Low-income transit riders are more reliant on public transit, with 60% percent of low-income households in the region not having access to a private vehicle, and low-income transit riders make more intra-agency transit transfers than high-income riders; and

WHEREAS, A more seamless-to-the-customer public transit system with integrated transit fares has the potential to both benefit low-income transit riders and attract new riders; and

WHEREAS, The Seamless Transit Principles proposed by Seamless Bay Area, are as follows:

1. Run all Bay Area transit as one easy-to-use system
2. Put riders first
3. Make public transit equitable and accessible to all





4. Align transit prices and passes to be simple, fair, and affordable
5. Connect effortlessly with other sustainable transportation
6. Plan communities and transportation together
7. Prioritize reforms to create a seamless network; and

WHEREAS, Seamless Bay Area is simultaneously sponsoring Assembly Bill (AB) 2057 (Chiu), currently a spot bill, with the intent of establishing a task force to develop recommendations that would improve coordination and oversight of the Bay Area's regional transit system; and

WHEREAS, It is imperative that the region's largest jurisdictions and transit operators' interests are appropriately represented on this task force given that the region's three largest transit operators - Muni, BART and AC Transit, carry 80% of the region's transit riders; and

WHEREAS, There is risk that reconciling the region's disparate transit fare and subsidy policies could inadvertently harm these core systems; and

WHEREAS, Should the task force recommend the creation or designation of a Transit Network Manager, the governance of that body should also reflect the strong transit ridership in the region's core; and

WHEREAS, At its February 26, 2020 meeting, the Transportation Authority Citizens Advisory Committee reviewed and discussed the Seamless Transit Principles proposed by Seamless Bay Area and adopted a motion of support for the adoption of the subject resolution of support for those principles; and

WHEREAS, At its February 11, 2020 meeting, the Board reviewed and discussed the Seamless Transit Principles; now, therefore let it be

RESOLVED, That the Transportation Authority hereby adopts a support position for the Seamless Transit Principles listed herein, and agrees to be publicly listed as a supporter; and be it further

RESOLVED, That the Transportation Authority recommends that any Task Force or Transit Network Manager formed through legislation be structured in a way that reflects where transit ridership is strong and be guided by a principle to enhance and optimize, and avoid harming to the region's core transit systems (Muni, BART, AC Transit); and be it further



RESOLVED, That the Transportation Authority affirms its commitment to working collaboratively with State agencies, the Metropolitan Transportation Commission, Bay Area transit operators, and other local and regional agencies and stakeholders to develop a highly integrated regional transit system that provides convenient, seamless, and affordable transit for customers.



# Memorandum

## AGENDA ITEM 14

**DATE:** February 20, 2020  
**TO:** Transportation Authority Board  
**FROM:** Maria Lombardo - Chief Deputy Director  
**SUBJECT:** 3/10/2020 Board Meeting: Approve San Francisco’s Draft Plan Bay Area 2050 Fiscally Constrained Project List

<p><b>RECOMMENDATION</b>   <input type="checkbox"/> Information   <input checked="" type="checkbox"/> Action</p> <p>Approve San Francisco’s Draft Plan Bay Area (PBA) 2050 Fiscally Constrained Project List</p> <p><b>SUMMARY</b></p> <p>For the past two years, the Metropolitan Transportation Commission and the Association of Bay Area Governments (MTC/ABAG) have been undergoing a multi-step process to establish land use, transportation, economic, and environmental strategies and investments to meet its ambitious greenhouse gas (GHG) reduction targets through the year 2050. As the Congestion Management Agency (CMA) for San Francisco, the Transportation Authority establishes San Francisco’s transportation priorities for inclusion in PBA 2050. By March 27, we must submit a comprehensive list of county priorities (including regionally significant projects and other programmatic needs) that fit within a fiscally constrained target.</p> <p>We are requesting approval of San Francisco’s draft list of fiscally constrained projects and programs, listed in Attachment 4. This is a first cut at a financially constrained list. We will return to the Board in June for approval of a refined project list, with a more complete picture of how PBA 2050 is coming together (e.g. regional strategies and projects, state of good repair needs, and county project lists).</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Fund Allocation</li> <li><input type="checkbox"/> Fund Programming</li> <li><input checked="" type="checkbox"/> Policy/Legislation</li> <li><input checked="" type="checkbox"/> Plan/Study</li> <li><input type="checkbox"/> Capital Project Oversight/Delivery</li> <li><input type="checkbox"/> Budget/Finance</li> <li><input type="checkbox"/> Contract/Agreement</li> <li><input type="checkbox"/> Other: _____</li> </ul>
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## BACKGROUND

Every four years, MTC/ABAG are required to develop and adopt a Regional Transportation Plan and Sustainable Communities Strategy, called Plan Bay Area or PBA, to guide the region’s long-term transportation investments and establish land-use priorities across all nine counties. The regional agencies adopted the last update in 2017, called PBA 2040.



The next PBA, known as PBA 2050, must establish a strategy to meet the region's greenhouse gas emission reduction target and accommodate the region's projected household and employment growth through 2050. It includes a transportation strategy that must only include investments that fit within a reasonable fund estimate, among other requirements.

*MTC/ABAG staff began the PBA update effort with Horizon in early 2018, which is a broadly scoped planning effort that explored how economic, environmental, technological, and political uncertainties may create new challenges for the Bay Area over the coming decade. This work is now being used to inform the transportation and land use decisions in PBA 2050 which was officially launched in September 2019. MTC/ABAG's timeline for both the Horizon and PBA 2050 effort is shown in Attachment 1.*

On July 23, 2019, through Resolution 20-06, the Transportation Authority Board approved goals to guide our work on PBA 2050 shown in Attachment 2. Throughout the process, we have worked in close coordination with local transportation agencies and regional transit providers to develop San Francisco's input into PBA 2050.

## **DISCUSSION**

This month, MTC/ABAG officials are considering approval of 25 policy strategies (shown in Attachment 3) corresponding to the PBA 2050 guiding principles of Affordable, Connected, Diverse, Healthy, and Vibrant as well as the cross-cutting issues of Equity and Resilience. Given ongoing conversations in the region and in Sacramento about potential new revenue sources for transportation and housing, MTC/ABAG will develop three alternative scenarios: *Blueprint Basic*, where only the \$472 billion in anticipated revenues from existing local, regional, state, and federal fund sources are considered; *Blueprint Plus: Crossing*, where \$73 billion in new regional revenues are available above and beyond *Blueprint Basic*, with most being dedicated to a new transbay rail crossing; and *Blueprint Plus: Fix-it-First*, with the same \$73 billion in new revenues, but where most revenues are dedicated to bringing the region's existing transportation networks up to a state of good repair. The new regional revenues are roughly on the scale of what might be available if a large regional transportation measure, such as the one being discussed by FASTER Bay Area and Voices for Public Transportation, were to be approved.

*Over the next few months, MTC/ABAG staff will analyze for how far these strategies get us toward to meet the region's state mandated greenhouse gas (GHG) reduction goals when combined with a list of transportation investments and the preferred regional growth framework. The three draft Blueprint scenarios will be released in June and will include transportation projects and programs that MTC/ABAG identify as priorities for regional investment. These could include capital projects such as a regional express lane system, a region-wide system of protected bike lanes, and new transit expansion projects, as well as programmatic investments such as the Bay Area's Climate Initiatives Program and maintenance and operations of the current transportation system.*

### **San Francisco's Draft Fiscally Constrained List of Projects and Programmatic Categories.**

We currently estimate San Francisco's discretionary county budget at around \$3.5 billion. This is based on anticipated local revenue from Prop K, Prop AA, the State Transportation



Improvement Program, and other sources such as local developer fees, with existing funding commitments to projects and the operations and maintenance of transit, streets, and roads netted out. Any local priorities that are not included in the regional portion of the Blueprint must be included in a county's fiscally constrained list. Consistent with past PBAs, we propose to leverage our county budget with targeted requests for regional discretionary funding for projects that are consistent with PBA 2050 guiding principles and strategies.

Consistency with PBA is important from a very practical project development perspective: it is a requirement to receive state and federal funds and certain federal approvals such as a Record of Decision for an environmental document. However, most transportation projects in San Francisco do not need to be listed as stand-alone projects in PBA, only those that significantly change capacity of the transportation system at a regional scale. The vast majority of projects can be grouped into programmatic categories, which provides flexibility to accommodate new priorities that may arise between PBA updates, as well as to deal with unexpected cost increases while keeping within San Francisco's fiscally constrained target.

**Project List:** The list of projects in Attachment 4a was approved by the Transportation Authority Board in July 2019 through Resolution 20-06, and only includes projects that are specifically required to be named in PBA per MTC/ABAG's guidance. Additional transportation expansion priorities are currently being identified through the ConnectSF process. For any new projects that would qualify as regionally significant under MTC/ABAG's definition but are not included, planning and environmental design work could proceed under one of the programmatic categories we are proposing until the next PBA is adopted in 2025. Per MTC/ABAG guidance, projects completed by 2021 are not included in the project lists as they are considered part of the baseline.

Attachment 4a provides scope, capital and operating cost, and schedule information for each project and identifies which of MTC/ABAG's key transportation strategies shown in Attachment 3 that each project supports. As required by MTC/ABAG, Attachment 4b identifies how much funding is already committed to each project, how much we propose assigning from San Francisco's county budget, and how much we propose to seek from MTC/ABAG's regional discretionary budget. It also splits the funding need between the first half of the plan (2021-2035) and the second half (2035-2050). Splitting the plan into two time periods is a new requirement related to evaluating compliance with GHG reduction targets.

**Programmatic Categories:** *As reported to the Board in July, MTC/ABAG staff provided the counties with draft lists of categories, which included groupings such as bike and pedestrian infrastructure, safety and security improvements, and planning and engineering work for future transit or roadway projects.*

Attachment 4a and 4b show cost and funding levels for San Francisco's programmatic categories that are based on estimates of how much locally controlled transportation revenue San Francisco can expect for these uses during the plan period. All operations and maintenance costs and expenditures were captured through MTC's needs assessment process for existing systems and are therefore not included at this time.

**Regional Discretionary Funding Requests for San Francisco Projects.**



After collecting the nine Bay Area CMAAs' fiscally constrained project lists, over the next few months, MTC/ABAG will begin developing recommendations for assigning discretionary regional funding (including regional, state, and federal funding not distributed to local jurisdictions via formula) to projects, in collaboration with local agency partners.

*One input to this effort, is the project performance assessment it conducted on large, regionally transformative projects as part of the Horizon process.* In general, most of the large projects across the region did not perform well due to high costs and for some projects, shortcomings in the way that the regional model and methodology captured benefits further impacted the performance results. Additionally, many projects were flagged for equity concerns because the model showed that high- and moderate-income residents would receive more transportation benefits than low-income residents. We are very supportive of the focus on equity and affordability, but note that the evaluation of San Francisco projects was particularly adversely impacted by factors such as not including Muni's existing means-based fare policies and not considering the benefits of improved transit reliability.

MTC/ABAG has asked agencies to submit letters outlining how local policies, additional project elements, and supportive regional strategies can help improve project performance if agencies are seeking regional discretionary funding. We are supportive of efforts to improve cost effectiveness, advance equity and the other goals in PBA. We are working with our agency partners on documenting this information and will return to the CAC with an update this spring.

#### **Next Steps.**

As they continue to refine the PBA 2050 project list, MTC/ABAG staff will work with the counties and project sponsors to update project information, revenue estimates, and needs assessments. We anticipate making changes that incorporate information from the in-progress SFMTA Capital Improvement Program, refined local revenue forecasts, funding strategy discussions around San Francisco's major capital projects, and outcomes from MTC/ABAG's investment tradeoff discussions. We will also benefit from having a more complete picture of the proposed regional strategies, state of good repair needs and funding, and amount of regional discretionary funds that are still available for direction to projects. We expect to come back to the CAC and the Transportation Authority Board with a revised list of San Francisco's fiscally constrained projects and programs in May and June, respectively.

MTC/ABAG anticipates approving the Final Blueprint by the end of 2020, and then beginning work on an implementation plan. After the environmental review process, the final PBA 2050 will be approved in July 2021. Throughout the remainder of the PBA 2050 process, we will continue to work with the Transportation Authority Board, CAC, our MTC/ABAG representatives, project sponsors, and leaders at the local and regional levels to advocate for inclusion of San Francisco's priorities.

#### **FINANCIAL IMPACT**

None.



## **CAC POSITION**

The CAC will consider this item at its February 26, 2020 meeting.

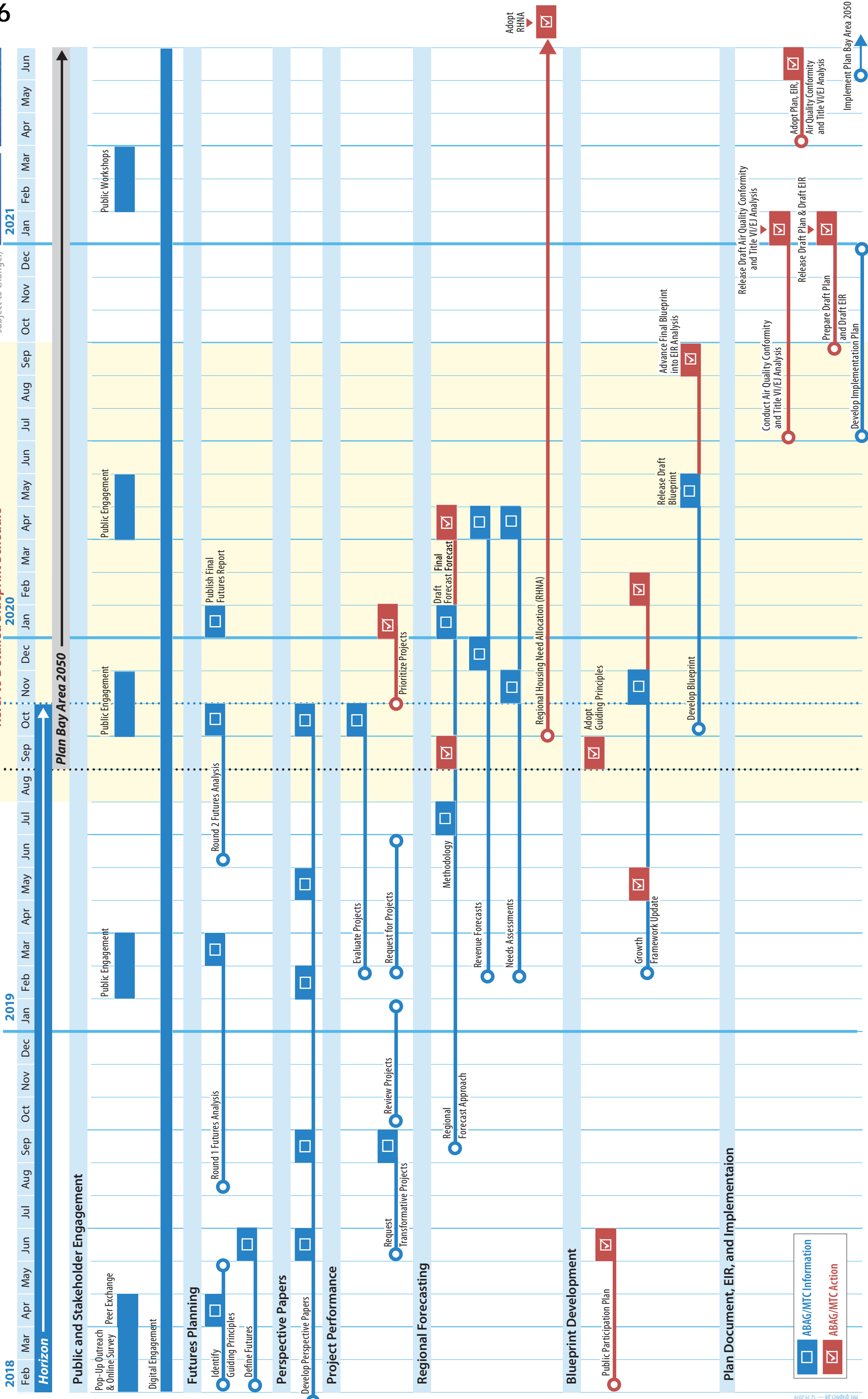
## **SUPPLEMENTAL MATERIALS**

- Attachment 1 - MTC/ABAG PBA 2050 schedule, last updated December 19, 2019
- Attachment 2 - San Francisco Goals for PBA 2050
- Attachment 3 - PBA 2050 Draft Blueprint Strategies table
- Attachment 4a - Draft Fiscally Constrained List - Project and Program Details
- Attachment 4b - Draft Fiscally Constrained List - Project and Program Funding Plans

# Horizon and Plan Bay Area 2050: Key Milestones

Attachment 1

(Dates are tentative and subject to change.)





**Attachment 2.**  
**San Francisco Goals for Plan Bay Area (PBA) 2050 (June 20, 2019)**

Goals	Notes
1. Ensure that all San Francisco projects and programs that need to be in PBA 2050 in order to advance are included	Projects need to be included in PBA 2050 if they: <ul style="list-style-type: none"> <li>• Need a federal action (e.g. federal environmental approval) or wish to seek state or federal funds before 2025 when the next PBA will be adopted</li> <li>• Trigger federal air quality conformity analysis (e.g. projects that change capacity of transit or major roadways)</li> </ul>
2. Advocate strongly for more investment in transit state of good repair to support existing communities and new growth	Coordinate with the “Big 3 Cities” accepting most of the job and housing growth in PBA and regional and local transit operators
3. Advocate for increased shares of existing revenues for San Francisco priorities (partial list at right)	<ul style="list-style-type: none"> <li>• BART Core Capacity</li> <li>• Better Market Street</li> <li>• Blended High Speed Rail/Caltrain service from San Jose to the Transbay Transit Center</li> <li>• Downtown Rail Extension</li> <li>• Geary BRT</li> <li>• Muni fleet and facilities expansion</li> <li>• Muni Forward</li> <li>• Vision Zero (support eligibility for MTC fund programs)</li> <li>• Placeholders for transit expansion planning (e.g. west side rail, 19<sup>th</sup> Avenue/M-Line, Central Subway extension, etc.)</li> </ul>
4. Advocate for new revenues for transportation and housing, and continue advocacy for San Francisco priorities in new expenditure plans	<ul style="list-style-type: none"> <li>• Regional transportation measure(s)</li> <li>• Regional housing measure(s)</li> <li>• State road user charge (monitor pilots)</li> <li>• Federal surface transportation bill</li> </ul>
5. Support performance-based decision-making	<ul style="list-style-type: none"> <li>• Support transparent reporting on strategy and project performance evaluation metrics, including impact on vehicles miles travelled</li> <li>• Continue advocating for a better way of capturing of transit crowding in PBA evaluation, key to transit core capacity issues</li> <li>• Advocate for discretionary funds for high-performing and regionally significant San Francisco projects</li> </ul>
6. Support coordinated transportation and land use planning	<ul style="list-style-type: none"> <li>• Advocate for regional policies to support jurisdictions accepting their fair share of housing and employment growth, especially in areas with existing or planned transit service to support new growth</li> <li>• Advocate for more funds to support Priority Development Area planning</li> </ul>

**Attachment 2.**  
**Draft San Francisco Goals for Plan Bay Area (PBA) 2050 (June 20, 2019)**

Goals	Notes
	<ul style="list-style-type: none"> <li>• Support update to the Regional Transit Expansion Policy to reflect appropriate land use requirements as a prerequisite for regional endorsement and investment</li> </ul>
7. Focus on equity	<ul style="list-style-type: none"> <li>• <b>Access to transportation</b> – Late Night Transportation Study, Prosperity Plan</li> <li>• <b>Affordability</b> – MTC Means-Based Pilot, BART university pass/discount</li> <li>• <b>Communities of Concern</b> – Continue Community Based Transportation Planning grant program, more funds for Lifeline Transportation Program</li> <li>• <b>Housing/Displacement</b> – Work with the Board, Mayor, SF agencies, etc. to develop recommendations for planning, production, and preservation of affordable housing and to prevent/mitigate displacement</li> <li>• <b>Vision Zero</b> – SFIP 2040 demonstrated that communities of concern experience disproportionately high rates of pedestrian and bike injuries. Continue to advocate for regional Vision Zero policies and investments.</li> </ul>
8. Support comprehensive, multimodal planning for the region’s network of carpool and express lanes	Develop a regional carpool/express lane vision that includes regional/local express transit service
9. Continue to show leadership in evaluating and planning for emerging mobility solutions and technologies	To the extent PBA 2050 addresses this topic, provide input to shape and lead on regional policy on emerging mobility services and technologies, including shared mobility and autonomous vehicles
10. Provide San Francisco input to shape and lead on other regional policy topics	<ul style="list-style-type: none"> <li>• Sea level rise/adaption</li> <li>• Economic performance and access to jobs</li> </ul>

**Summary Table: Draft Blueprint Strategy Costs (millions of YOES)\***

Element	Theme	Strategy	Blueprint Basic	Blueprint Plus Crossing	Blueprint Plus Fix It First
Transportation	Maintain and Optimize the Existing System	Operate and Maintain the Existing System	\$392,000	\$392,000	\$423,000
		Implement Per-Mile Tolling on Congested Freeways with Transit Alternatives	\$1,000	\$1,000	\$1,000
		Reform Regional Transit Fare Policy	\$10,000	\$10,000	\$10,000
		Enable Seamless Mobility with Unified Trip-Planning and Fare Payment	\$100	\$100	\$100
	Create Healthy and Safe Streets	Build a Complete Streets Network	\$7,000	\$7,000	\$7,000
		Advance a Regional Vision Zero Policy	\$1,000	\$1,000	\$1,000
	Enhance Local and Regional Transit	Advance Low-Cost Transit Projects	\$20,000	\$20,000	\$20,000
		Build a New Transbay Rail Crossing ( <i>Plus Crossing Only</i> )	N/A	\$50,000	N/A
Housing	Spur Housing Production and Create Inclusive Communities	Allow a Greater Mix of Housing Densities and Types in Growth Geographies	\$0	\$0	\$0
		Reduce Barriers to Housing Near Transit and in Areas of High Opportunity	\$0	\$0	\$0
		Transform Aging Malls and Office Parks into Neighborhoods	\$0	\$0	\$0
	Protect, Preserve, and Produce More Affordable Housing	Fund Affordable Housing Protection, Preservation and Production ( <i>Plus Only</i> )	\$107,000	\$171,000	\$171,000
		Require 10 to 20 Percent of All New Housing to be Affordable	\$0	\$0	\$0
		Further Strengthen Renter Protections Beyond State Legislation	\$0	\$0	\$0
Economy	Improve Economic Mobility	Expand Childcare Support for Low-Income Families ( <i>Plus Only</i> )	N/A	\$30,000	\$30,000
		Create Incubator Programs in Economically-Challenged Areas ( <i>Plus Only</i> )	N/A	\$15,000	\$15,000
		Retain Key Industrial Lands through Establishment of Priority Production Areas	\$0	\$0	\$0
	Shift the Location of Jobs	Allow Greater Commercial Densities in Growth Geographies	\$0	\$0	\$0
		Assess Transportation Impact Fees on New Office Developments	\$0	\$0	\$0
		Assess Jobs-Housing Imbalance Fees on New Office Developments	\$0	\$0	\$0
Environment	Reduce Risks from Hazards	Adapt to Sea Level Rise	\$5,000	\$20,000	\$20,000
		Provide Means-Based Financial Support to Retrofit Existing Buildings ( <i>Plus Only</i> )	N/A	\$20,000	\$20,000
	Reduce Environmental Impacts	Maintain Urban Growth Boundaries	\$0	\$0	\$0
		Protect High-Value Conservation Lands ( <i>Plus Only</i> )	N/A	\$15,000	\$15,000
		Expand the Climate Initiatives Program	\$1,000	\$1,000	\$1,000
<b>Grand Total</b>			<b>\$544,100</b>	<b>\$752,100</b>	<b>\$734,100</b>

	Column A	B	C	D	E	F	G	H	J
	PBA 2050 Projects and Programs	Project Sponsor*	Project Description	Capital Cost <sup>1</sup>	Annual Average O+M <sup>2</sup> Cost <sup>1</sup>	First Year Construction	First Year Operations / Open for Use	Total Cost <sup>1</sup> incl. O+M <sup>2</sup>	Supports MTC/ABAG's Transportation Strategies
1	Expand SFMTA Transit Fleet - LRV (Core Capacity)	SFMTA	This project entails additional expansion of the SFMTA light rail vehicle fleet, beyond the currently wrapping up 68-car expansion. The purpose is to meet projected future transit demand, as indicated in the SFMTA Transit Fleet Plan. It will facilitate the future provision of additional service through the procurement of transit vehicles. Includes the purchase of 45 expansion light vehicles.	\$ 204.3		2026	2029	\$ 204.3	K, M
2	Muni Train Control Upgrade (Core Capacity)	SFMTA	The Train Control Upgrade Program is a 10-year program of systemwide upgrades from Automatic Train Control System (ATCS) to Communications Based Train Control (CBTC) as well expansion of the train control system to surface light rail lines. The new CBTC will improve vehicle volumes by 20 percent through the Market Street tunnel. Additionally, expansion of the new CBTC to the surface will provide—for the first time—the ability for centralized line management of the entire light rail system.	\$ 297.0	\$ 10	2022	2028	\$ 397.0	A, K, M
3	Muni Forward: Core Capacity Rail	SFMTA	Muni Forward is a program of relatively low-cost improvements to enhance reliability, efficiency, travel times, and rider comfort that has been successfully deployed on 40 miles of Transit Priority Projects across San Francisco. This Program builds on the successes of the Rapid bus network investments. These rail-oriented Muni Forward projects will promote similar or greater ridership gains on the J Church, K Ingleside, and M Ocean View lines.	\$ 117.0		2023	2026	\$ 117.0	K, M
4	Muni Forward + Frequency Increase (other)	SFMTA	Muni Forward is a program of relatively low-cost improvements to enhance reliability, efficiency, travel times, and rider comfort that has been successfully deployed on 40 miles of Transit Priority Projects across San Francisco. This Program builds on the successes of the Rapid bus network investments.	\$ 303.5	\$ 76.9	varies	varies	\$ 2,508.9	E, F, G
5	Expand SFMTA Transit Fleet - Buses	SFMTA	This project entails future expansion of the SFMTA bus fleet. The purpose is to meet projected future transit demand, as indicated in the SFMTA Transit Fleet Plan, as well as operational changes needed for a 100% electric fleet. Cost presented includes expansion vehicles only.	\$ 259.5		2020	2029	\$ 259.5	A, K
6	Expand SFMTA Transit Fleet - Facilities	SFMTA	This project entails future expansion of the SFMTA transit facilities to house and maintain transit expansion vehicles. The purpose is to meet projected future transit demand, as indicated in the SFMTA Transit Fleet Plan. It will facilitate the future provision of additional service through the procurement of transit vehicles as well as the development of needed modern transit facilities. Cost represents only expanded facilities capacity, above and beyond replacement of existing capacity.	\$ 293.0		2022	2024	\$ 293.0	A
7	Treasure Island Congestion Pricing	SFCTA	The Treasure Island Mobility Bundle includes the Treasure Island Congestion Pricing program, as well as multiple components funded through the toll and other sources, including: enhanced Muni services and new ferry service from downtown SF to Treasure Island, new AC Transit express bus service to Treasure Island, on-island shuttle bus services, and improved bike/ped and transit infrastructure on Treasure Island and Yerba Buena Island.	\$ 32.0	\$ 40.2	2019	2021	\$ 1,303.7	B, C, D, E, F, G, K
8	Downtown SF Congestion Pricing	SFCTA	Downtown SF Congestion Pricing includes a charging a toll to drive into the Downtown SF Cordon area, and investing revenues in increased transit service and in bicycle, pedestrian, and transit infrastructure improvements.	\$ 125.0	\$ 25.0	2024	2025	\$ 1,089.0	D, E, F, K
9A	US-101/I-280 Express Lanes	SFCTA	The SF County US-101/I-280 Express Lanes Project will construct High Occupancy Toll (HOT) lanes from the San Mateo County line to the existing transit only lanes on 3rd Street in San Francisco. This is an important bus and shuttle link in the regional transportation network.	\$ 184.0		2021	2023	\$ 184.0	D, G, K, N
9B	US-101/I-280 Regional/Local Express Bus to Support Express Lanes in SF	SFCTA	Cost includes additional bus fleet and increased service on the 14X and 8BX Muni routes.	\$ 10.0	\$ 7.0	2025	2026	\$ 265.0	D, G, K, N

<sup>1</sup> Project costs are displayed in millions of year-of-expenditure dollars.

<sup>2</sup> O+M stands for Operations and Maintenance.

**San Francisco's Draft Fiscally Constrained PBA 2050 Project List  
Project and Program Details**

	Column A	B	C	D	E	F	G	H	J
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10	San Francisco Late Night Transportation Improvements	SFCTA	New routes and increased frequency for all-night bus service.	\$ -	\$ 3.8	n/a	2025	\$ 146.0	G, K
11	Mission Bay Ferry Landing	Port of SF	Establish New Ferry terminal to serve Mission Bay and Central Waterfront neighborhoods. Project located on the San Francisco Bay adjacent to the intersection of Terry Francois Blvd. and 16th Street.	\$ 58.4		2019	2021	\$ 58.4	G, K
12	Better Market Street Transportation Enhancements	SFPW / SFMTA	Improve Market Street between Steuart Street and Octavia Boulevard. Includes sidewalk improvements, way-finding, lighting, landscaping, transit boarding islands, transit connections, traffic signals, and transportation circulation changes. Does not include non-transportation and/or SOGR elements	\$ 297.6		2021	2027	\$ 297.6	E, F
13	Geary Boulevard Improvement Project	SFMTA	Implement bus and streetscape improvements to Geary Boulevard between Stanyan and 34th Avenue. This proposal includes dedicated bus lanes, enhanced platforms, new bus passing zones, adjustments to local bus stops, turn lane restrictions, new signalization with Transit Signal Priority, real-time arrival information, low-floor buses, and safety improvements in support of Vision Zero.	\$ 235.0	\$ 11.0	2020	2022	\$ 732.0	E, F, J, K
14	Van Ness Avenue Bus Rapid Transit	SFMTA	Implement Van Ness Avenue Bus Rapid Transit (Van Ness BRT) to improve approximately two miles of a major north-south urban arterial in San Francisco. Project would include a dedicated lane for BRT buses in each direction between Mission and Lombard Streets. There will be nine BRT stations, with platforms on both sides for right-side passenger boarding and drop-off.	\$ 225.2		2016	2021	\$ 169.6	E, F, G, J, K
15	Parkmerced Transportation Improvements	SFMTA	Implements transportation improvements for the Parkmerced development including enhanced transit service, pedestrian and bicycle facilities, intersection improvements, parking management, carshare and bikehare stations, and TDM measures such as transit subsidies. The private developer is primarily responsible for design, build, and funding of transportation improvements. Construction phasing is expected to take 20-25 years to complete, with anticipated start of construction in 2019. Project area is generally bounded by 19th Ave & Junipero Serra to the east, Lake Merced Blvd to the west, Holloway Ave to the north, Brotherhood Way to the south.	\$ 99.0		2019	2022	\$ 99.0	E, F, G, K, M
16	Alemany Roadway Redesign and Ramp Reconfiguration	SFCTA	A redesign of Alemany Boulevard from approximately the St. Mary's Park Footbridge in the west to the 101/280 interchange in the east, and the relocation of the 101 off-ramp, in anticipation of potential affordable housing development.	\$ 250.0		2025	2027	\$ 250.0	E, F
17	Balboa Park Station Area - Closure of Northbound I-280 On-Ramp from Geneva Avenue	SFCTA	This project would study and implement closure of the northbound I-280 on-ramp from Geneva Avenue to improve safety. Closure of the ramp would initially be a pilot project, if possible, depending on the results of traffic studies. The linked on-ramp from Ocean Avenue would remain open.	\$ 6.0		2021	2022	\$ 6.0	E, F
18	Balboa Park Station Area - Southbound I-280 Off-Ramp Realignment at Ocean Avenue	SFCTA	This project will realign the existing uncontrolled southbound I-280 off-ramp to Ocean Avenue into a T-intersection and construct a new traffic signal on Ocean Avenue to control the off-ramp.	\$ 20.5		2021	2022	\$ 20.5	E, F
19	Yerba Buena Island (YBI) I-80 Interchange Improvement	SFCTA	Includes two major components: 1) On the east side of the island, the I-80/YBI Ramps project will construct new westbound on- and off- ramps to the new Eastern Span of the Bay Bridge, including approach roadways; 2) On the west side of the island, the YBI West-Side Bridges Retrofit project will seismically retrofit the existing bridge structures.	\$ 280.8		2013	2023	\$ 280.8	E, F, N
20	Southeast Waterfront Transportation Improvements - Phase 1	SFPW / OCII	Create a 5 mile multi-modal corridor of streets, transit facilities, pedestrian paths, and dedicated bicycle lanes to link the Candlestick/Hunters Point Shipyard project area to BART, T-Third light rail, Caltrain, local bus lines and future ferry service. This project also includes express bus and enhances transit service between the Southeast Waterfront and downtown San Francisco.	\$ 268.5	\$ 18.0	2021	2034	\$ 659.0	E, F, G, K

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21	Hunters Pt Shipyard and Candlestick Pt Local Roads	SFPW / OCII	Build new local streets within the Hunters Point Shipyard and Candlestick Point area.	\$ 501.0		2021	2034	\$ 501.0	E, F
22	Geneva-Harney Bus Rapid Transit	SFMTA	Initial Phase (east of Bayshore/Arleta): Provides exclusive bus lanes, transit signal priority, and high-quality stations along Tunnel Avenue, Beatty Avenue, Alana Way, Harney Way, and Crisp Avenue, and terminating at the Hunters Point Shipyard Center. Future Phase (west of Bayshore/Arleta): Continuation of exclusive bus lanes, transit signal priority, and high-quality stations west to Santos St., connecting with Muni Forward transit priority improvements. This near-term alternative does not rely on the full extension of Geneva Avenue across US 101 to Harney Way. The project includes pedestrian and bicycle improvements in support of Vision Zero.	\$ 68.1		2022	2024	\$ 68.1	E, F, G, J, K
23	Historic Streetcar Extension - Fort Mason to 4th & King	SFMTA	The project would extend historic streetcar service by extending either the E-line or the F-line service from Fisherman's Wharf to Fort Mason, using the historic railway tunnel between Van Ness Ave. and the Fort Mason Center. The project will seek non-transit specific funds and will seek to improve the historic streetcar operation as an attractive service for tourists and visitors.	\$ 68.9		2026	2030	\$ 68.9	G, K
24	Caltrain Downtown Extension, part of the Caltrain Business Plan	TJPA	Extension of Caltrain commuter rail service from its current San Francisco terminus at 4th & King Streets to a new underground terminus.	\$ 3,935.0		2022	2029	\$ 3,935.0	H, K, M
25	Caltrain Enhanced Service Growth	Caltrain	TBD. Caltrain is working to include enhanced service levels that maximize the use of available infrastructure and more fully serve expected market demand on the corridor. This is an incremental advancement of Caltrain's overall 2040 Service Vision, and would allow maximum use of the Downtown Extension (project 24), once that project is open.	TBD	TBD	TBD	TBD	TBD	K, M
26	BART Core Capacity	BART	San Francisco contribution to the regional project (does not reflect full project cost)	\$ 50.0				\$ 50.0	G, H, K, M
27	Financing Costs	SF						\$ 250.0	n/a

\*Project sponsor agencies: SFCTA: San Francisco County Transportation Authority; SFMTA: San Francisco Municipal Transportation Agency; SFPW: San Francisco Public Works; OCII: Office of Community Investment and Infrastructure; TJPA: Transbay Joint Powers Authority; Port of SF: Port of San Francisco; BART: Bay Area Rapid Transit

<sup>1</sup>Project costs are displayed in millions of year-of-expenditure dollars.

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101	Bicycle and Pedestrian Program	SF	new and extended bike and pedestrian facilities, such as: quick-build projects, Taylor Street and Valencia Street Long-Term Improvements				\$ 65.0	E, F
102	Intersection Improvements	SF	intersection signalization				\$ 64.0	E, F
103	Local Road Preservation and Rehabilitation	SF	pavement resurfacing and/or rehabilitation, emergency repair, bike/pedestrian facilities rehabilitation				**	A
104	Management Systems	SF	signal coordination, transit management systems, communications systems				\$ 35.0	G, K
105	Minor Highway Improvements	SF	minor extensions (less than 1/4 mile) and interchange modifications without additional capacity (such as Vision Zero Ramps, underpass at Alana and US-101, etc.)				\$ 50.0	E, F, N
106	Minor Roadway Expansions	SF	minor local road extensions or new lanes less than 1/4 mile				\$ 40.0	E, F
107	Minor Transit Improvements	SF	bus shelters, landscaping, bus bulbs, alternative fuel transit vehicles and facilities				\$ 65.0	G, K
108	Multimodal Streetscape Improvements	SF	landscaping, lighting, parking realignment, ADA compliance				\$ 50.0	E, F
109	Planning and Research	SF	may include: Southeast San Francisco Caltrain Station Relocation Planning and Environmental Analysis, PDA planning, community-based planning, emerging mobility research and studies				\$ 20.0	E, F, J, K, L, M
110	Routine Operations & Maintenance	SF	transit operations, local streets and roads operations				**	A
111	Safety and Security	SF	Safe Routes to School projects and programs, lighting improvements, transit safety projects				\$ 50.0	E, F
112	Transit Corridors Long-Range Planning	SF	planning and environmental studies (e.g. West Side Rail Study, Central Subway Extension, Pennsylvania Alignment, 19thVM-line Subway)				\$ 50.0	E, F, J, K, L, M
113	Transit Operations		additional support for transit operations in San Francisco				**	A
114	Transit Preservation and Rehabilitation	SF	vehicle maintenance, facility maintenance				**	A
115	Travel Demand Management and Climate Program	SF	e.g. BART Perks, alternative fuel vehicles and facilities				\$ 20.0	B, C, E, F, K, M
<b>TOTAL COST OF SF PROJECTS AND PROGRAMS</b>							<b>\$ 14,722.3</b>	

\*\* All operations and maintenance costs and expenditures on existing systems are captured in MTC's needs assessment process.

<b>MTC/ABAG'S TRANSPORTATION STRATEGIES (Column J)</b>	
<b>Draft Blueprint Transportation Strategies</b>	
A.	Operate and maintain the existing system
B.	Enable seamless mobility with unified trip planning and fare programs
C.	Reform regional transit fare policy
D.	Implement per-mile tolling on congested freeways with transit alternatives
E.	Build a complete streets network
F.	Advance regional Vision Zero policy through street design and reduced speeds
G.	Advance low-cost transit projects
H.	Build new Transbay rail crossing
<b>Other Transportation Strategies</b>	
J.	Build a next generation bus rapid transit network
K.	Make strategic modernization & expansion investments for public transit
L.	Extend the regional rail network
M.	Increase existing rail capacity and frequency by modernizing the network
N.	Build carpool lanes & address interchange bottlenecks

<sup>1</sup> Project costs are displayed in millions of year-of-expenditure dollars.

<sup>2</sup> O+M stands for Operations and Maintenance.



San Francisco's Draft Fiscally Constrained PBA 2050 Project List  
Project and Program Funding Plans

	Column A	B	D	E	H	K	L	M	N	O	P	Q
	PBA 2050 Projects and Programs	Project Sponsor*	Capital Cost <sup>1</sup>	Annual Average O+M <sup>2</sup> Cost <sup>1</sup>	Total Cost <sup>1</sup> incl. O+M	Funding Prior to 2021	2021-2035 Committed Funding	2021-2035 County Budget	2021-2035 Regional Discretionary Request	2036-2050 Committed Funding	2036-50 County Budget	2036-2050 Regional Discretionary Request
1	Expand SFMTA Transit Fleet - LRV (Core Capacity)	SFMTA	\$ 204.3		\$ 204.3		\$ 56.0	\$ 74.2	\$ 74.2	\$ -	\$ -	\$ -
2	Muni Train Control Upgrade (Core Capacity)	SFMTA	\$ 297.0	\$ 10	\$ 397.0	\$ 16.1	\$ 30.8	\$ 116.7	\$ 233.4	\$ -	\$ -	\$ -
3	Muni Forward: Core Capacity Rail	SFMTA	\$ 117.0		\$ 117.0		\$ 49.8	\$ 7.2	\$ 60.0	\$ -	\$ -	\$ -
4	Muni Forward + Frequency Increase (other)	SFMTA	\$ 303.5	\$ 76.9	\$ 2,508.9	\$ 157.6	\$ 144.3	\$ 249.5	\$ 249.5	\$ 495.3	\$ 606.3	\$ 606.3
5	Expand SFMTA Transit Fleet - Buses	SFMTA	\$ 259.5		\$ 259.5		\$ 15.0	\$ 48.9	\$ 195.6	\$ -	\$ -	\$ -
6	Expand SFMTA Transit Fleet - Facilities	SFMTA	\$ 293.0		\$ 293.0		\$ 50.0	\$ 121.5	\$ 121.5	\$ -	\$ -	\$ -
7	Treasure Island Congestion Pricing	SFCTA	\$ 32.0	\$ 40.2	\$ 1,303.7	\$ 9.6	\$ 355.7	\$ -	\$ 47.4	\$ 891.0	\$ -	\$ -
8	Downtown SF Congestion Pricing	SFCTA	\$ 125.0	\$ 25.0	\$ 1,089.0	\$ 2.0	\$ 320.2	\$ 62.0	\$ 61.0	\$ 643.8	\$ -	\$ -
9A	US-101/I-280 Express Lanes	SFCTA	\$ 184.0		\$ 184.0			\$ 23.0	\$ 161.0	\$ -	\$ -	\$ -
9B	US-101/I-280 Regional/Local Express Bus to Support Express Lanes in SF	SFCTA	\$ 10.0	\$ 7.0	\$ 265.0	\$ -	\$ 80.0	\$ 2.0	\$ 8.0	\$ 175.0	\$ -	\$ -
10	San Francisco Late Night Transportation Improvements	SFCTA	\$ -	\$ 3.8	\$ 146.0		\$ 14.0	\$ 11.5	\$ 22.9	\$ 28.3	\$ 34.6	\$ 34.6
11	Mission Bay Ferry Landing	Port of SF	\$ 58.4		\$ 58.4	\$ 7.0	\$ 9.7	\$ 16.7	\$ 25.0	\$ -	\$ -	\$ -
12	Better Market Street Transportation Enhancements	SFPW / SFMTA	\$ 297.6		\$ 297.6	\$ 38.5	\$ 8.1	\$ 151.1	\$ 100.0	\$ -	\$ -	\$ -
13	Geary Boulevard Improvement Project	SFMTA	\$ 235.0	\$ 11.0	\$ 732.0	\$ 46.1	\$ 57.9	\$ 194.0	\$ 125.0	\$ 89.6	\$ 169.4	\$ 50.0
14	Van Ness Avenue Bus Rapid Transit	SFMTA	\$ 225.2		\$ 169.6	\$ 159.9	\$ 9.7	\$ -	\$ -	\$ -	\$ -	\$ -
15	Parkmerced Transportation Improvements	SFMTA	\$ 99.0		\$ 99.0	\$ -	\$ 99.0	\$ -	\$ -	\$ -	\$ -	\$ -
16	Alemany Roadway Redesign and Ramp Reconfiguration	SFCTA	\$ 250.0		\$ 250.0	\$ -	\$ -	\$ 125.0	\$ 125.0	\$ -	\$ -	\$ -
17	Balboa Park Station Area - Closure of Northbound I-280 On-Ramp from Geneva Avenue	SFCTA	\$ 6.0		\$ 6.0			\$ 6.0	\$ -	\$ -	\$ -	\$ -
18	Balboa Park Station Area - Southbound I-280 Off-Ramp Realignment at Ocean Avenue	SFCTA	\$ 20.5		\$ 20.5	\$ 2.3	\$ -	\$ 18.3	\$ -	\$ -	\$ -	\$ -
19	Yerba Buena Island (YBI) I-80 Interchange Improvement	SFCTA	\$ 280.8		\$ 280.8	\$ 181.2	\$ 62.6	\$ -	\$ 36.9	\$ -	\$ -	\$ -
20	Southeast Waterfront Transportation Improvements - Phase 1	SFPW / OCII	\$ 268.5	\$ 18.0	\$ 659.0	\$ 2.0	\$ 108.8	\$ 94.2	\$ 100.0	\$ 102.7	\$ 176.4	\$ 75.0
21	Hunters Pt Shipyard and Candlestick Pt Local Roads	SFPW / OCII	\$ 501.0		\$ 501.0	\$ 70.0	\$ 431.0	\$ -	\$ -	\$ -	\$ -	\$ -

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**San Francisco's Draft Fiscally Constrained PBA 2050 Project List  
Project and Program Funding Plans**

	Column A	B	D	E	H	K	L	M	N	O	P	Q
	PBA 2050 Projects and Programs	Project Sponsor*	Capital Cost <sup>1</sup>	Annual Average O+M <sup>2</sup> Cost <sup>1</sup>	Total Cost <sup>1</sup> incl. O+M	Funding Prior to 2021	2021-2035 Committed Funding	2021-2035 County Budget	2021-2035 Regional Discretionary Request	2036-2050 Committed Funding	2036-50 County Budget	2036-2050 Regional Discretionary Request
22	Geneva-Harney Bus Rapid Transit	SFMTA	\$ 68.1		\$ 68.1			\$ 18.1	\$ 50.0	\$ -	\$ -	\$ -
23	Historic Streetcar Extension - Fort Mason to 4th & King	SFMTA	\$ 68.9		\$ 68.9	\$ 0.9	\$ -	\$ 68.0	\$ -	\$ -	\$ -	\$ -
24	Caltrain Downtown Extension, part of the Caltrain Business Plan	TJPA	\$ 3,935.0		\$ 3,935.0	\$ 194.2	\$ 1,068.5	\$ 350.0	\$ 2,322.3	\$ -	\$ -	\$ -
25	Caltrain Enhanced Service Growth	Caltrain	TBD	TBD	TBD							
26	BART Core Capacity	BART			\$ 50.0			\$ 50.0				
27	Financing Costs	SF			\$ 250.0			\$ 250.0				

\*Project sponsor agencies: SFCTA: San Francisco County Transportation Authority; SFMTA: San Francisco Municipal Transportation Agency; SFPW: San Francisco Public Works; OCII: Office of Community Investment and Infrastructure; TJPA: Transbay Joint Powers Authority; Port of SF: Port of San Francisco; BART: Bay Area Rapid Transit

<sup>1</sup> Project costs are displayed in millions of year-of-expenditure dollars.

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San Francisco's Draft Fiscally Constrained PBA 2050 Project List  
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	Column A	B	D	E	H	K	L	M	N	O	P	Q
	PBA 2050 Projects and Programs	Project Sponsor*	Capital Cost <sup>1</sup>	Annual Average O+M <sup>2</sup> Cost <sup>1</sup>	Total Cost <sup>1</sup> incl. O+M	Funding Prior to 2021	2021-2035 Committed Funding	2021-2035 County Budget	2021-2035 Regional Discretionary Request	2036-2050 Committed Funding	2036-50 County Budget	2036-2050 Regional Discretionary Request
101	Bicycle and Pedestrian Program	SF			\$ 65.0			\$ 40.0			\$ 25.0	
102	Intersection Improvements	SF			\$ 64.0			\$ 40.0			\$ 24.0	
103	Local Road Preservation and Rehabilitation	SF			**			**			**	
104	Management Systems	SF			\$ 35.0			\$ 20.0			\$ 15.0	
105	Minor Highway Improvements	SF			\$ 50.0			\$ 20.0			\$ 30.0	
106	Minor Roadway Expansions	SF			\$ 40.0			\$ 40.0			\$ -	
107	Minor Transit Improvements	SF			\$ 65.0			\$ 50.0			\$ 15.0	
108	Multimodal Streetscape Improvements	SF			\$ 50.0			\$ 30.0			\$ 20.0	
109	Planning and Research	SF			\$ 20.0			\$ 10.0			\$ 10.0	
110	Routine Operations & Maintenance	SF			**			**			**	
111	Safety and Security	SF			\$ 50.0			\$ 30.0			\$ 20.0	
112	Transit Corridors Long-Range Planning	SF			\$ 50.0			\$ 50.0			\$ -	
113	Transit Operations				**			**			**	
114	Transit Preservation and Rehabilitation	SF			**			**			**	
115	Travel Demand Management and Climate Program	SF			\$ 20.0			\$ 10.0			\$ 10.0	

\*\* All operations and maintenance costs and expenditures on existing systems are captured in MTC's needs assessment process.

PROJECT AND PROGRAM TOTALS					\$ 14,722.3	\$ 887.3	\$ 2,971.1	\$ 2,397.7	\$ 4,118.7	\$ 2,425.7	\$ 1,155.7	\$ 766.0
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Total County Budget Assigned by MTC: \$ 3,553.5

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# Memorandum

## AGENDA ITEM 15

**DATE:** February 18, 2020

**TO:** Transportation Authority Board

**FROM:** Cynthia Fong - Deputy Director for Finance and Administration

**SUBJECT:** 3/10/20 Board Meeting: Amend the Adopted Fiscal Year 2019/20 Budget to Increase Revenues by \$2.1 Million, Decrease Expenditures by \$71.9 Million and Decrease Other Financing Sources by \$67.0 Million for a Total Net Increase in Fund Balance of \$7.0 Million.

<p><b>RECOMMENDATION</b>   <input type="checkbox"/> Information   <input checked="" type="checkbox"/> Action</p> <p>Amend the adopted Fiscal Year (FY) 2019/20 budget to increase revenues by \$2.1 million, decrease expenditures by \$71.9 million and decrease other financing sources by \$67.0 million for a total net increase in fund balance of \$7.0 million.</p> <p><b>SUMMARY</b></p> <p>Every year we present the Board with any adjustments to the annual budget adopted the previous June. This revision is an opportunity to take stock of changes in revenue trends, recognize grants or other funds that are obtained subsequent to the original approval of the annual budget, and adjust for unforeseen expenditures. In June 2019, through Resolution 19-61, the Board adopted the FY 2019/20 Annual Budget and Work Program. Revenue and expenditure figures pertaining to several capital projects need to be updated from the original estimates contained in the adopted FY 2019/20 Budget.</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Fund Allocation</li> <li><input type="checkbox"/> Fund Programming</li> <li><input type="checkbox"/> Policy/Legislation</li> <li><input type="checkbox"/> Plan/Study</li> <li><input type="checkbox"/> Capital Project Oversight/Delivery</li> <li><input checked="" type="checkbox"/> Budget/Finance</li> <li><input type="checkbox"/> Contract/Agreement</li> <li><input type="checkbox"/> Other: _____</li> </ul>
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## DISCUSSION

### Background.

The budget revision is an opportunity for us to revise revenue projections and expenditure line items to reflect new information or requirements identified in the months elapsed since the adoption of the annual budget. Our Fiscal Policy allows for the amendment of the adopted budget during the fiscal year to reflect actual revenues and expenditures incurred.



The revisions typically take place after completion of the annual fiscal audit, which certifies actual expenditures and carryover revenues.

**Proposed Budget Amendment.**

The budget revision reflects an increase of \$2.1 million in revenues, a decrease of \$71.9 million in expenditures, and a decrease of \$67.0 million in other financing sources for a total net increase of \$7.0 million in fund balance. These revisions include carryover revenues and expenditures from the prior period. The effect of the amendment on the adopted FY 2019/20 Budget in the aggregate line item format specified in the Fiscal Policy is shown in Attachments 1 and 3. A comparison of revenues and expenditures to prior year actual and adopted budgeted numbers is presented in Attachment 2. The detailed budget explanations by line item are included in Attachment 4. Detailed budget revisions for the Treasure Island Mobility Management Agency (TIMMA) will be presented as a separate item to the April TIMMA Committee and TIMMA Board.

Revenue and expenditure revisions are related to the new Traffic Congestion Mitigation Tax Program, investment income, program revenues, and several capital project costs reported in the Sales Tax Program (Prop K), Congestion Management Agency Programs, Vehicle Registration Fee for Transportation Improvements Program (Prop AA), and TIMMA Program. Major changes in revenue and expenditure line items include the following:

- **New Funding**
  - Traffic Congestion Mitigation Tax
  - Pennsylvania Avenue Extension Pre-environmental Study
  - Vista Point at Pier E2 on Yerba Buena Island
  - Neighborhood Transportation Improvement Projects: District 10 15-Third Street Bus Study, District 4 Mobility Improvements Study, and District 5 Octavia Improvements Study
  - Travel demand modeling services
- **Increase in Revenue Estimates**
  - Investment Income
  - TIMMA Program Revenues
- **Project Delays or Changes in Scope**
  - Prop K San Francisco Municipal Transportation Agency's (SFMTA's) vehicle procurements for motor coaches, trolley coaches and light rail vehicles
  - Prop K SFMTA's Van Ness Bus Rapid Transit Project
  - Prop K Caltrain Downtown Extension



- Prop AA SFMTA's Muni Metro Enhancements Project
- Prop AA San Francisco Public Works' (SFPW's) Haight Street Resurfacing and Pedestrian Lighting Project
- Prop AA San Francisco Public Works 23rd Street, Dolores Street, York Street and Hampshire Street Pavement Renovation Project
- Interstate 80/Yerba Buena Island Ramps Interchange Improvement Project - Southgate Road Realignment
- U.S. 101/I-280 Express Lanes and Bus Project
- TIMMA Program

Additionally, administrative operating costs, debt service costs and other financing sources need to be updated from the original estimates contained in the adopted FY 2019/20 budget.

### **FINANCIAL IMPACT**

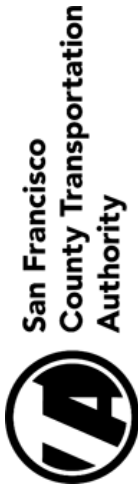
The proposed amendment to the FY 2019/20 budget would increase revenues by \$2.1 million, decrease expenditures by \$71.9 million, and decrease other financing sources by \$67.0 million, for a total net increase in fund balance of \$7.0 million, as described above.

### **CAC POSITION**

The CAC will consider this item at its February 26, 2020 meeting.

### **SUPPLEMENTAL MATERIALS**

- Attachment 1 - Proposed Budget Amendment
- Attachment 2 - Proposed Budget Amendment - Comparison of Revenues and Expenditures
- Attachment 3 - Proposed Budget Amendment - Line Item Detail
- Attachment 4 -Budget Amendment Explanations

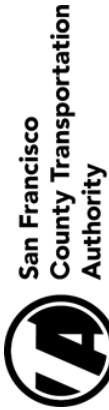


Attachment 1  
Proposed Fiscal Year 2019/20 Budget Amendment

		Proposed Budget Amendment by Fund							
		Congestion Management Agency Programs	Transportation Fund for Clean Air Program	Vehicle Registration Fee for Transportation Improvements Program	Treasure Island Mobility Management Agency Program	Traffic Congestion Mitigation Tax Program	Proposed Fiscal Year 2019/20 Budget Amendment		
<b>Revenues:</b>									
Sales Tax Revenues	\$ 110,861,695	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 110,861,695		
Vehicle Registration Fee	-	-	-	4,930,000	-	-	4,930,000		
Traffic Congestion Mitigation Tax	-	-	-	-	7,668,508	-	7,668,508		
Investment Income	3,077,099	-	2,500	222,075	-	44,569	3,346,243		
Program Revenues	30,000	20,248,393	771,753	-	2,682,254	-	23,732,400		
Other Revenues	45,980	-	-	-	-	-	45,980		
	<b>Total Revenues</b>	20,248,393	774,253	5,152,075	2,682,254	7,713,077	150,584,826		
<b>Expenditures</b>									
Capital Project Costs	144,016,821	19,750,553	1,110,104	4,631,435	1,474,492	-	170,983,405		
Administrative Operating Costs	5,843,440	4,264,414	48,258	309,568	570,930	75,032	11,111,642		
Debt Service Costs	21,794,250	-	-	-	-	-	21,794,250		
	<b>Total Expenditures</b>	24,014,967	1,158,362	4,941,003	2,045,422	75,032	203,889,297		
<b>Other Financing Sources (Uses):</b>		3,766,574	-	-	(636,832)	-	-		
	<b>Net change in Fund Balance</b>	\$ (60,769,479)	\$ (384,109)	\$ 211,072	\$ -	\$ 7,638,045	\$ (53,304,471)		
Budgetary Fund Balance, as of July 1	\$ 98,919,279	\$ -	\$ 1,090,174	\$ 14,620,577	\$ -	\$ -	\$ 114,630,030		
Budgetary Fund Balance, as of June 30	\$ 38,149,800	\$ -	\$ 706,065	\$ 14,831,649	\$ -	\$ 7,638,045	\$ 61,325,559		



Category	Fiscal Year 2018/19 Actual	Fiscal Year 2019/20 Adopted Budget	Proposed Fiscal Year 2019/20 Budget Amendment	Variance from Fiscal Year 2019/20 Adopted Budget	% Variance
Sales Tax Revenues	\$ 115,670,918	\$ 110,861,695	\$ 110,861,695	\$ -	0.0%
Vehicle Registration Fee	4,945,470	4,930,000	4,930,000	-	0.0%
Traffic Congestion Mitigation Tax	-	-	7,668,508	7,668,508	N/A
Investment Income	2,844,187	1,622,000	3,346,243	1,724,243	106.3%
Program Revenues					
Federal	5,076,521	23,180,409	15,955,790	(7,224,619)	-31.2%
State	754,186	2,148,445	930,069	(1,218,376)	-56.7%
Regional and other	3,216,636	5,693,723	6,846,541	1,152,818	20.2%
Other Revenues	53,328	45,980	45,980	-	0.0%
<b>Total Revenues</b>	<b>132,561,246</b>	<b>148,482,252</b>	<b>150,584,826</b>	<b>2,102,574</b>	<b>1.4%</b>
Capital Project Costs	127,884,701	242,496,571	170,983,405	(71,513,166)	-29.5%
Administrative Operating Costs					
Personnel expenditures	6,247,903	8,117,924	8,117,924	-	0.0%
Non-Personnel expenditures	2,603,262	2,829,175	2,993,718	164,543	5.8%
Debt Service Costs	33,566,262	22,314,250	21,794,250	(520,000)	-2.3%
<b>Total Expenditures</b>	<b>170,302,128</b>	<b>275,757,920</b>	<b>203,889,297</b>	<b>(71,868,623)</b>	<b>-26.1%</b>
Other Financing Sources (Uses)	-	67,000,000	-	(67,000,000)	N/A
<b>Net change in Fund Balance</b>	<b>\$ (37,740,882)</b>	<b>\$ (60,275,668)</b>	<b>\$ (53,304,471)</b>	<b>\$ 6,971,197</b>	<b>-11.6%</b>
<b>Budgetary Fund Balance, as of July 1</b>	<b>\$ 152,370,912</b>	<b>\$ 114,630,030</b>	<b>\$ 114,630,030</b>		
<b>Budgetary Fund Balance, as of June 30</b>	<b>\$ 114,630,030</b>	<b>\$ 54,354,362</b>	<b>\$ 61,325,559</b>		



	Proposed Budget Amendment by Fund							Proposed Fiscal Year 2019/20 Budget Amendment
	Sales Tax Program	Congestion Management Agency Programs	Transportation Fund for Clean Air Program	Vehicle Registration Fee for Transportation Improvements Program	Treasure Island Mobility Management Agency Program	Traffic Congestion Mitigation Tax Program		
<b>Revenues:</b>								
Sales Tax Revenues	\$ 110,861,695	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 110,861,695
Vehicle Registration Fee	-	-	-	4,930,000	-	-	-	4,930,000
Traffic Congestion Mitigation Tax	-	-	-	-	-	-	7,668,508	7,668,508
Investment Income	3,077,099	-	2,500	222,075	-	-	44,569	3,346,243
Program Revenues								
Federal								
Advanced Transportation and Congestion Management Technologies Deployment	-	-	-	-	489,565	-	-	489,565
Highway Bridge Program - I-80/Yerba Buena Island Interchange Improvement	-	9,923,073	-	-	-	-	-	9,923,073
Highway Bridge Program - Yerba Buena Island Bridge Structures	-	3,897,647	-	-	-	-	-	3,897,647
Surface Transportation Program 3% Revenue and Augmentation	30,000	1,615,505	-	-	-	-	-	1,645,505
State								
Seismic Retrofit Proposition 1B - I/80 YBI Interchange Improvement Project	-	930,069	-	-	-	-	-	930,069
Regional and other								
BATA - I-80/Yerba Buena Island Interchange Improvement	-	1,354,851	-	-	-	-	-	1,354,851
MTC - Downtown Congestion Pricing Study	-	400,000	-	-	-	-	-	400,000
SF OEWD - South of Cesar Chavez Area Plan	-	56,312	-	-	-	-	-	56,312
SFPW - Octavia Improvements Study	-	78,295	-	-	-	-	-	78,295
SFMTA - Lake Merced Pedestrian Safety	-	4,842	-	-	-	-	-	4,842
SFMTA Travel Demand Modeling for TIRCP and STIP Grant Application	-	39,995	-	-	-	-	-	39,995
SF Planning - ConnectSF Phase 2 Outreach	-	98,216	-	-	-	-	-	98,216
SF Planning - Downtown Congestion Pricing Study	-	570,371	-	-	-	-	-	570,371
SF Planning - Transportation Demand Management Program	-	40,000	-	-	-	-	-	40,000
SFMTA - Travel Demand Modeling Assistance	-	148,242	-	-	-	-	-	148,242
San Mateo County Transportation Authority - 10/1/280 Managed Lanes	-	182,475	-	-	-	-	-	182,475
TIDA - Treasure Island Mobility Management Agency	-	-	-	-	2,192,689	-	-	2,192,689
TIDA - Yerba Buena Island Interchange Improvement & Bridge Structures	-	876,282	-	-	-	-	-	876,282
Vehicle Registration Fee Revenues (TFCA)	-	-	771,753	-	-	-	-	771,753
Schmidt Family Foundation/The 11th Hour Project - TNC Research	-	32,218	-	-	-	-	-	32,218
Other Revenues								
San Francisco Department of Environment - Shower Facilities	2,000	-	-	-	-	-	-	2,000
Sublease of Office Space	43,980	-	-	-	-	-	-	43,980
<b>Total Revenues</b>	<b>\$ 114,014,774</b>	<b>\$ 20,248,393</b>	<b>\$ 774,253</b>	<b>\$ 5,152,075</b>	<b>\$ 2,682,254</b>	<b>\$ 7,713,077</b>	<b>\$ 7,713,077</b>	<b>\$ 150,584,826</b>

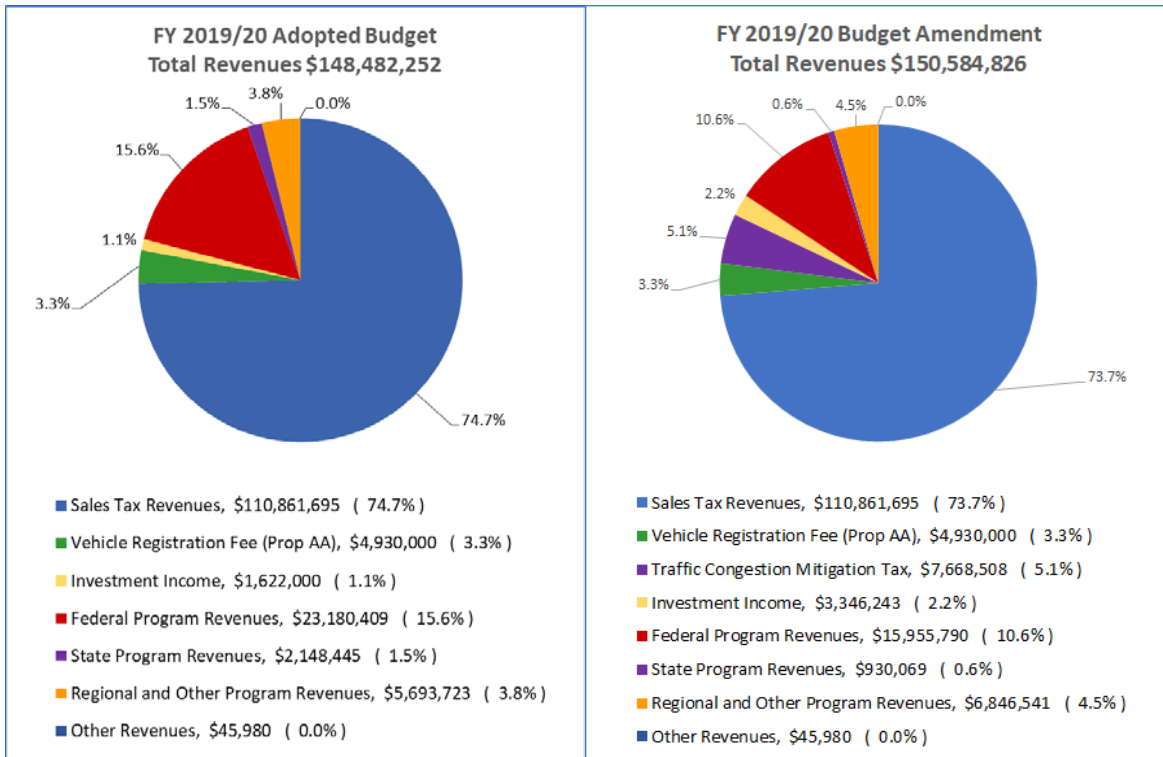


Proposed Budget Amendment by Fund									
	Sales Tax Program	Congestion Management Agency Programs	Transportation Fund for Clean Air Program	Vehicle Registration Fee for Transportation Improvements Program	Treasure Island Mobility Management Agency Program	Traffic Congestion Mitigation Tax Program	Proposed Fiscal Year 2019/20 Budget Amendment		
<b>Expenditures:</b>									
Capital Project Costs									
Individual Project Grants, Programs & Initiatives	\$ 142,000,000	\$ -	\$ 1,110,104	\$ 4,631,435	\$ -	\$ -	\$ -	\$ -	\$ 147,741,539
Technical Professional Services	2,016,821	19,750,553	-	-	1,474,492	-	-	-	23,241,866
Administrative Operating Costs									
Personnel Expenditures									
Salaries	1,828,991	2,905,425	32,987	211,608	386,028	44,453	5,409,492		
Fringe Benefits	846,690	1,345,002	15,271	97,960	178,702	20,579	2,504,204		
Pay for Performance	204,228	-	-	-	-	-	204,228		
Non-personnel Expenditures									
Administrative Operations	2,782,031	13,987	-	-	-	10,000	2,806,018		
Equipment, Furniture & Fixtures	114,500	-	-	-	-	-	114,500		
Commissioner-Related Expenses	67,000	-	-	-	6,200	-	73,200		
Debt Service Costs									
Fiscal Charges	97,000	-	-	-	-	-	97,000		
Interest Expenses	8,777,250	-	-	-	-	-	8,777,250		
Bond Principal Payment	12,920,000	-	-	-	-	-	12,920,000		
<b>Total Expenditures</b>	<b>\$ 171,654,511</b>	<b>\$ 24,014,967</b>	<b>\$ 1,158,362</b>	<b>\$ 4,941,003</b>	<b>\$ 2,045,422</b>	<b>\$ 75,032</b>	<b>\$ 203,889,297</b>		
<b>Other Financing Sources (Uses):</b>									
Transfers in - Prop K Match to Grant Funding	-	3,766,574	-	-	-	-	3,766,574		
Transfers out - Prop K Match to Grant Funding	(3,129,742)	-	-	-	(636,832)	-	(3,766,574)		
Draw on Revolving Credit Agreement	-	-	-	-	-	-	-		
<b>Total Other Financing Sources (Uses)</b>	<b>(3,129,742)</b>	<b>3,766,574</b>	<b>-</b>	<b>-</b>	<b>(636,832)</b>	<b>-</b>	<b>-</b>		
<b>Net change in Fund Balance</b>	<b>\$ (60,769,479)</b>	<b>\$ -</b>	<b>\$ (384,109)</b>	<b>\$ 211,072</b>	<b>\$ -</b>	<b>\$ 7,638,045</b>	<b>\$ (53,304,471)</b>		
Budgetary Fund Balance, as of July 1	\$ 98,919,279	\$ -	\$ 1,090,174	\$ 14,620,577	\$ -	\$ -	\$ 114,630,030		
<b>Budgetary Fund Balance, as of June 30</b>	<b>\$ 38,149,800</b>	<b>\$ -</b>	<b>\$ 706,065</b>	<b>\$ 14,831,649</b>	<b>\$ -</b>	<b>\$ 7,638,045</b>	<b>\$ 61,325,559</b>		
Fund Reserved for Program and Operating Contingency	\$ 11,086,170	\$ -	\$ 77,175	\$ 493,000	\$ -	\$ 766,851	\$ 12,423,196		

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TOTAL REVENUES		
Adopted Budget	Proposed Budget Amendment	Variance
\$148,482,252	\$150,584,826	\$2,102,574

The following chart shows the comparative composition of revenues for the proposed amended and adopted FY 2019/20 budget.



Traffic Congestion Mitigation Tax Revenues		
Adopted Budget	Proposed Budget Amendment	Variance
\$0	\$7,668,508	\$7,668,508

In November 2019, San Francisco voters passed Proposition D with 67.65% of the vote, which will impose an excise tax of 3.25% of the passenger fare, excluding any taxes, fees, and other government charges, for rides originating in San Francisco that are provided by transportation network companies (e.g. Lyft, Uber) and mobility providers of autonomous vehicles and private transit service vehicles. The rate for shared rides would be 1.5%. The tax is effective January 1, 2020 for rides originating in San Francisco,

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and expires on November 5, 2045. Rides provided in zero-emission vehicles from January 1, 2020 through December 31, 2024 would be taxed at 1.5%.

After allowable City administrative costs, 50% of the tax would provide funding for the San Francisco Municipal Transportation Agency (SFMTA) for Muni transit service and affordability, system reliability and capacity, and keeping transit infrastructure in a state of good repair, for defined purposes. The remaining 50% would provide funding for the Transportation Authority for planning, design studies, and/or capital improvements that promote users' safety in the public right-of-way, for defined purposes.

We anticipate collecting \$7.7 million in FY 2019/20. Revenues collected in this fiscal year will fund the initial programming and setup costs of the program. Per agreement with the Controller's Office of the City and County of San Francisco (City), we are not budgeting any capital expenditures this fiscal year during the initial setup and development stage until we have accumulated a sufficient cash balance within the program.

<b>Investment Income</b>		
<b>Adopted Budget</b>	<b>Proposed Budget Amendment</b>	<b>Variance</b>
\$1,622,000	\$3,346,243	\$1,724,243

In November 2017, we issued Sales Tax Revenue Bonds with the total face amount of \$248.3 million. Investment income has increased mainly due to a higher than anticipated bond proceeds bank balance as a result of the low number of invoices received from project sponsors. Investment income in the Sales Tax Program is estimated to be \$3.1 million, an increase of \$1.5 million from the adopted budget.

In August 2019, we began investing Vehicle Registration Fee revenues in a higher earning interest certificate of deposits accounts, which will yield an estimated \$222,075 in investment income for the year.

In addition, we anticipate earning \$44,569 of investment income on the new Traffic Congestion Mitigation Tax revenues that will be collected this year, which is maintained in the City's Treasury Pool.

Total Investment Income is projected to increase by \$1.7 million for FY 2019/20.

<b>Federal Program Revenues</b>		
<b>Adopted Budget</b>	<b>Proposed Budget Amendment</b>	<b>Variance</b>
\$23,180,409	\$15,955,790	\$(7,224,619)

Federal Program Revenues are expected to decrease by \$7.2 million from the adopted FY 2019/20 budget. The majority of the decrease is related to the delay in receipt of federal authorization from Caltrans for the Southgate Road Realignment Project, Phase 2 of the I-80/Yerba Buena Island (YBI) Interchange Improvement project, which was originally anticipated to be awarded by the end of FY 2018/19. Since we received Caltrans' authorizations to proceed for the right-of-way and construction

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phases in August 2019 and November 2019, respectively, approximately \$7.2 million in federal revenues for this project will be deferred to FY 2020/21.

<b>State Program Revenues</b>		
<b>Adopted Budget</b>	<b>Proposed Budget Amendment</b>	<b>Variance</b>
\$2,148,445	\$930,069	\$(1,218,376)

State Program Revenues are also expected to decrease by \$1.2 million from the adopted FY 2019/20 budget. The Southgate Road Realignment Project is partially funded by state Proposition 1B Seismic Retrofit funds, which fulfills a portion of the local match requirement to the related federal grant, as mentioned above. Since federal authorization was received later than anticipated, approximately \$1.2 million in state revenues will be deferred to FY 2020/21.

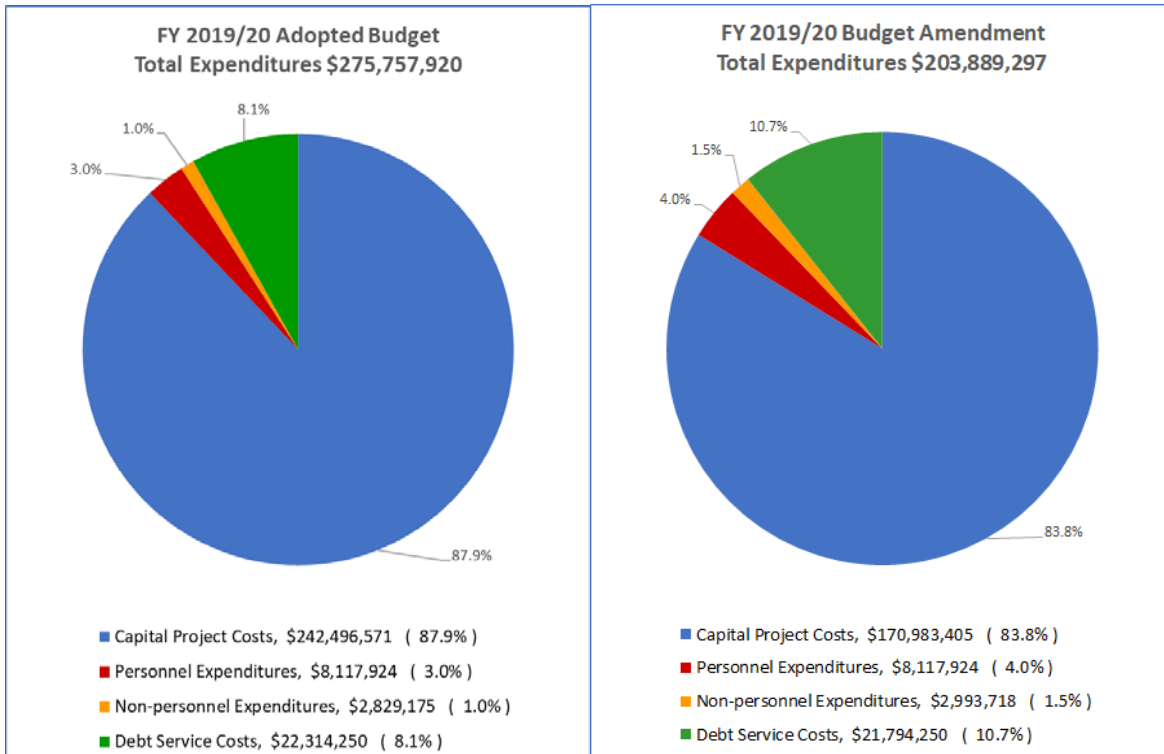
<b>Regional and Other Program Revenues</b>		
<b>Adopted Budget</b>	<b>Proposed Budget Amendment</b>	<b>Variance</b>
\$5,693,723	\$6,846,541	\$1,152,818

Regional and Other Program Revenues are expected to increase by \$1,152,818. Revenue estimates are updated to reflect new or increased funding for several projects. In October 2019, we executed a Memorandum of Agreement with San Francisco Public Works (SFPW) for its contribution, totaling \$200,000, to the Octavia Improvements Study. The budget amendment reflects the first year's activities for this study, increasing revenues by \$78,295. In addition, the Bay Area Toll Authority (BATA) has requested that we provide operations and maintenance services on their new Vista Point at Pier E2 on YBI. BATA has agreed to provide \$400,000 of funding for this effort through June 2022. This budget amendment reflects the first year's activities, increasing revenues by \$150,000. Furthermore, we are providing additional travel demand modeling services to the SFMTA in support for Transit and Intercity Rail Capital Program grant application and the State Transportation Improvement Program grant application, which is anticipated to bring in an additional \$39,995 in revenues. The budget amendment also reflects an increase in revenues from the Treasure Island Development Authority (TIDA) by \$443,493, which is due to the collection of deferred revenues that we are recognizing in FY 2019/20 for work related to the TIMMA Program that was completed in the previous fiscal year.

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TOTAL EXPENDITURES		
Adopted Budget	Proposed Budget Amendment	Variance
\$275,757,920	\$203,889,297	\$(71,868,623)

The following chart shows the comparative composition of expenditures for the proposed amended and adopted FY 2019/20 budget.



Capital Project Costs		
Adopted Budget	Proposed Budget Amendment	Variance
\$242,496,571	\$170,983,405	\$(71,513,166)

Capital Project Costs in FY 2019/20 are budgeted to decrease from the adopted FY 2019/20 amended budget by \$71.5 million, which is primarily due to anticipated lower capital costs for the Prop K program overall, most of which are awarded as grants to agencies like the SFMTA. Costs by Program Fund are detailed below.

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<b>Capital Project Costs - Sales Tax Program</b>		
<b>Adopted Budget</b>	<b>Proposed Budget Amendment</b>	<b>Variance</b>
\$200,734,927	\$144,016,821	\$(56,718,106)

We developed the FY 2019/20 Prop K Capital Project Costs based on a review of the 2019 Prop K Strategic Plan, consultation with project sponsors, and evaluation of likely reimbursement needs based on project delivery schedules. Some of the main drivers of the Prop K Capital Project Costs and our sales tax revenue bond are the SFMTA vehicle procurements. In FY 2019/20, the SFMTA's reimbursement requests for the motor coaches and trolley coaches have been slower than anticipated. This is caused in part by the SFMTA billing other non-Prop K sources first, and a lag in the delivery schedule for the new trolley coaches. In FY 2019/20, the SFMTA's anticipated reimbursement requests for the Siemens Light Rail Vehicle Procurement project have been delayed while SFMTA addresses safety and performance concerns about the new fleet. In addition, we expect lower than anticipated reimbursements for the Van Ness Bus Rapid Transit project, which is behind schedule and also able to bill non-Prop K sources first, and anticipated work on design of the Downtown Extension has been delayed while the peer review panel conducted its review of governance, oversight, and project delivery.

We still anticipate fully spending the bond proceeds within three years of issuance. Based on information provided by the SFMTA and other sponsors and our review of expenditure and reimbursement rates, we recommend amending the Prop K Capital Project Costs to \$142.0 million, a decrease of \$58.0 million over the adopted budget of \$200.0 million.

In addition, in October 2019, through Resolution 20-16, the Board approved a \$1.6 million Prop K appropriation to develop a Project Initiation Report for the Pennsylvania Avenue Extension Pre-Environmental Study. The report will outline alternatives for evaluation during the environmental review process. The budget amendment reflects the first year's activities for performing pre-environmental analyses and scoping work, along with public outreach.

Total Capital Project Costs for the Sales Tax Program is projected to decrease by \$56.7 million for FY 2019/20.

<b>Capital Project Costs - Congestion Management Agency (CMA) Programs</b>		
<b>Adopted Budget</b>	<b>Proposed Budget Amendment</b>	<b>Variance</b>
\$29,869,867	\$19,750,553	\$(10,119,314)

Capital Project Costs for CMA Programs in FY 2019/20 are budgeted to decrease by \$10.1 million as compared to the adopted budget. As mentioned above, this decrease is primarily due to the delay in obtaining federal and state authorization for the Southgate Road Realignment project, which resulted in the deferral of right-of-way and construction activities totaling \$8.9 million to FY 2020/21. We advertised

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the construction phase work in December 2019 and plan to award the contract by March 2020. We anticipate construction activities will be completed by June 2022.

In November 2019, through Resolution 20-16, the Board approved a Prop K appropriation of \$4.1 million to fund development of the draft environmental document for the U.S. 101/280 Express Lanes and Bus Project. We are shifting \$2.7 million of budgeted capital costs from FY 2019/20 to FY 2020/21, reflecting a longer project initiation process than expected and more staff and consultant time now expected to be spent later in the study timeline. We expect to complete the study by December 2021.

Furthermore, we have initiated various NTIP planning efforts during the year, including District 10 15-Third Street Bus Study, District 4 Mobility Improvements Study, and Octavia Improvements Study. These planning efforts are funded by Prop K appropriations and Memorandum of Agreements. The proposed budget amendment reflects an increase of \$79,384 in related capital costs for these efforts.

<b>Capital Project Costs - Vehicle Registration Fee for Transportation Improvements Program</b>		
<b>Adopted Budget</b>	<b>Proposed Budget Amendment</b>	<b>Variance</b>
\$8,738,768	\$4,631,435	\$(4,107,333)

For FY 2019/20, we have seen slower than anticipated costs from three of the largest projects in the current budget, as well as delayed allocations for six projects. Lower costs are primarily due to continued delays in finalizing construction bid documents for SFMTA’s Muni Metro Enhancements project due to challenges during design (e.g. identifying allowable work hours and contractor staging areas to minimize impacts to riders and train service, and interfacing with old infrastructure), and delays to San Francisco Public Works’ (SFPW’s) Haight Street Resurfacing and Pedestrian Lighting project due to coordination with sewer work and SFPW’s 23rd Street, Dolores Street, York Street and Hampshire Street Pavement Renovation project due to coordination with water work. Consistent with the Prop AA timely-use-of-funds policy, we have been working with the SFMTA and SFPW to review the status of the six projects that have not requested allocation of Prop AA funds programmed in FY 2019/20 given that these projects may, at the discretion of the Board, have funding de-obligated and reprogrammed to other projects through a competitive call for projects. This amendment decreases Capital Project Costs by \$4.1 million.

<b>Capital Project Costs - TIMMA</b>		
<b>Adopted Budget</b>	<b>Proposed Budget Amendment</b>	<b>Variance</b>
\$2,042,905	\$1,474,492	\$(568,413)

Capital Project Costs for the TIMMA Program in FY 2019/20 are expected to decrease by \$568,413 as compared to the adopted budget. This decrease is primarily due to the hold on the toll system design work scope which is not expected to proceed until the toll policies are adopted. Work scope includes

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issuance of the Request for Proposals for a System Integrator, launch system integration work, and completion of civil engineering design. These activities have not yet initiated due to ongoing analysis and outreach on toll policies but expect those to commence once toll policies are approved.

<b>Administrative Operating Costs - Non-Personnel Expenditures</b>		
<b>Adopted Budget</b>	<b>Proposed Budget Amendment</b>	<b>Variance</b>
\$2,829,175	\$2,993,718	\$164,543

Administrative operating costs for non-personnel expenditures are expected to increase by \$164,543. Original estimates did not anticipate increased costs for on-going legal counsel support services, our website development services for the grant management portal and related systems, implementation of the new contacts database management system and recruitment consulting services.

<b>Debt Service Costs</b>		
<b>Adopted Budget</b>	<b>Proposed Budget Amendment</b>	<b>Variance</b>
\$22,314,250	\$21,794,250	\$(520,000)

Debt Service Costs are expected to decrease by \$520,000. Due to the proposed decrease of \$56.7 million in Prop K Capital Project Costs, we do not anticipate the need to drawdown from the revolver credit loan agreement (Revolver) this fiscal year. As of December 31, 2019, we do not have an outstanding balance on the Revolver. Thus, interest and fiscal charges associated with the Revolver are no longer needed. In addition, interest expenses and fiscal charges came under budget due to the favorable municipal market rates.

<b>Other Financing Sources (Uses) - Draw on Revolving Credit Agreement</b>		
<b>Adopted Budget</b>	<b>Proposed Budget Amendment</b>	<b>Variance</b>
\$67,000,000	\$0	\$(67,000,000)

As noted above, due to the proposed decrease of \$56.7 million in Prop K Capital Project Costs, we do not anticipate the need to drawdown from the Revolver this fiscal year. We will continue to monitor capital spending closely during the remainder of the year through a combination of cash flow needs for allocation reimbursements, progress reports and conversations with project sponsors, particularly our largest grant recipient, the SFMTA.