CALIFORNIA TRANSPORTATION COMMISSION
JANUARY 2022 AMENDED BASELINE AGREEMENT

On January 27, 2022, the California Transportation Commission approved an amendment to the 2020 Solutions for Congested Corridors Program Baseline Agreement for the **Bay Area Rapid Transit Train Control Modernization Program**.

This amendment included the following documents:

1. Letter from the implementing agency to request this amendment (page 2)
2. January 2022 Commission action approving the amendment to the Baseline Agreement (pages 3-5)
3. December 2021 Commission action approving the program amendment (pages 6-9)
4. December 2021 Commission action approving the allocation amendment (pages 10-13)
5. Revised electronic Project Programming Requests for the impacted components (pages 14-53)
6. Original Baseline Agreement received by the Commission in June 2021 (pages 54-463)

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT
2150 Webster, 9th Floor
Oakland, CA 94604
(510) 464-6000

December 30, 2021

TRANSMITTED VIA EMAIL
Naveen.Habib@catc.ca.gov

Mitchell Weiss
Executive Director
California Transportation Commission
1120 N Street, MS 52
Sacramento, CA 95814

Re: San Francisco Bay Area Rapid Transit District –Train Control Modernization Program Solutions for Congested Corridors Program Amended Baseline Agreement Request

Dear Mitchell Weiss:

The San Francisco Bay Area Rapid Transit District (BART) would like to request an amended Baseline Agreement for the initial $45.15 million in funding from the 2020 Solutions for Congested Corridors Program award for the Train Control Modernization Program component of the Core Capacity Program. In December 2021, the California Transportation Commission (CTC) approved BART's SCCP allocation amendment in the amount of $45.15 million. This amended Baseline Agreement request will reflect the program and allocation amendments from the December CTC meeting.

We appreciate your consideration of this amended Baseline Agreement request and are available to answer any questions or provide materials if needed.

If you have any questions, please contact Richard Fuentes at (510) 853-4562 or at rfuentes@bart.gov.

Sincerely,

Priya Mathur

Priya Mathur
Director, Funding Strategy

Memorandum

To: CHAIR AND COMMISSIONERS **CTC Meeting**: January 26-27, 2022

From: MITCH WEISS, Executive Director

Reference Number: 4.28, Action

Prepared By: Naveen Habib
Associate Deputy Director

Published Date: January 14, 2022

Subject: Amendment to the 2020 Solutions for Congested Corridors Program Baseline Agreement for the Bay Area Rapid Transit Train Control Modernization Program – Resolution SCCP-P-2122-03BA, Amending Resolution SCCP-P-2021-04B

Recommendation:

Staff recommends the California Transportation Commission (Commission) approve an amendment to the 2020 Solutions for Congested Corridors Program Baseline Agreement submitted in accordance with the Commission's Senate Bill (SB) 1 Accountability and Transparency Guidelines and establish the agreement as the basis for project delivery and monitoring.

The Bay Area Rapid Transit (BART) Train Control Modernization Program includes the following project components:

PPNO	County	Implementing Agency	Project Title (with embedded link to amended baseline agreement)
2010E	San Francisco / Alameda	BART	Switch Machine Cabling Project - BART Labor
2010H	San Francisco / Alameda	BART	Switch Machine Cabling Project - Procurement of Non-Revenue Equipment
2010J	San Francisco / Alameda	BART	Switch Machine Cabling Project - Material Procurement
2010K	San Francisco / Alameda	BART	Switch Machine Cabling Project - Services
2010F	San Francisco / Alameda	BART	MacArthur/Downtown Oakland Interlock Cabling Upgrade Contract
2010G	San Francisco / Alameda	BART	Communications-based Train Control

Issue:

As the implementing agency, BART requests the Commission approve the amendment to the 2020 Solutions for Congested Corridors Program Baseline Agreement for the Train Control Modernization Program, which was programmed as part of the 2020 Solutions for Congested Corridors Program.

During the December 2021 meeting, the Commission approved a program amendment to the 2020 Solutions for Congested Corridors Program to add three new project components and an allocation amendment to redistribute $45,150,000 between two project components for the Train Control Modernization Program ($41,800,000 allocated to the Switch Machine Cabling Project - BART Labor component and $3,350,000 to the Switch Machine Cabling Project - Procurement of Non-Revenue Equipment component) respectively. These two approved actions necessitate an amendment to the original Baseline Agreement approved by the Commission in May 2021.

Commission staff has reviewed the amended Baseline Agreement and determined that the expected benefits, delivery schedule, cost, and funding plan are consistent with the project amendments approved by the Commission. Approval of this amended Baseline Agreement will establish the basis for project delivery and monitoring.

Background:

The Commission adopted the SB 1 Accountability and Transparency Guidelines at its March 21, 2018 meeting and directed agencies to provide executed Baseline Agreements that set forth the agreed-upon expected benefits, delivery schedule, project cost, and funding plan. The Baseline Agreement provides a benchmark for comparison to the current status of a project for subsequent reporting purposes. The Baseline Agreement must be signed by the California Department of Transportation (Caltrans) Director and District Director, the Commission's Executive Director, the project applicant, and the implementing agency.

On December 2, 2020, the Commission approved the 2020 Solutions for Congested Corridors Program. That action included programming $60 million for the BART Train Control Modernization Program.

During the May 2021 meeting, the Commission approved the allocation of $45,150,000 to one of the Train Control Modernization Program's project components, the Switch Machine Cabling Contract. The Commission also approved the BART Baseline Agreement during this meeting.

On December 9, 2021, the Commission approved a program amendment to add three new project components and an allocation amendment to redistribute $45,150,000 between two project components for the Train Control Modernization Program.

Resolution SCCP-P-2122-03BA

Be It Resolved, that the Commission does hereby amend the 2020 Solutions for Congested Corridors Program project baseline agreement for the Bay Area Rapid Transit's Train Control Modernization Program to reflect the program and allocation amendments approved by the Commission on December 9, 2021.

Memorandum

To: CHAIR AND COMMISSIONERS **CTC Meeting**: December 8-9, 2021

From: MITCH WEISS, Executive Director

Reference Number: 4.19, Action

Prepared By: Naveen Habib
Associate Deputy Director

Published Date: November 24, 2021

Subject: Amendment to the 2020 Solutions for Congested Corridors Program, Resolution G-21-68, Amending Resolution G-21-33

Recommendation:

Staff recommends the California Transportation Commission (Commission) approve amendments to the 2020 Solutions for Congested Corridors Program, as reflected in the updated Program of Projects (Attachment B).

Issue:

As the implementing agency, Bay Area Rapid Transit (BART) requests the Commission consider a program amendment to the Train Control Modernization Program Project awarded in the 2020 Solutions for Congested Corridors Program. This program amendment would split an existing project component into four individual components, as reflected in Attachment B. Program amendments that preserve the original project scope, cost, and delivery timelines are allowable in the Solutions for Congested Corridors Program.

BART received only a single responsive bid for this project component which exceeded the Engineer's Estimate by 48 percent. BART indicates the increase may be a result of the current labor market, volatile material costs, and risk assumptions on the demolition work scope included in the original contract.

As only one bid was received, BART developed a hybrid proposal to split the Train Control Modernization Program's Switch Machine Cabling Contract project component into four individual project components to maintain the project component's cost-effectiveness. This approach would allow BART to perform some of the specialized work itself and seek outside contractors where applicable.

This program amendment would amend the project delivery, title, and description for the Switch Machine Cabling Contract whilst preserving the original project scope and delivery timeline and maintaining the original programmed amount.

Specifically, the program amendment would:

1. Change the original project component name from “Switch Machine Cabling Contract” to “Switch Machine Cabling Project - BART Labor.”

2. Add three new project components as follows:
    a. Switch Machine Cabling Project - Procurement of Non-Revenue Equipment
        - To procure on-rail equipment needed to support construction crews during installation and for material transport.
    b. Switch Machine Cabling Project - Procurement of Material
        - To procure materials to replace train control and electrical equipment.
    c. Switch Machine Cabling Project – Services
        - To conduct quality assurance, control inspections and testing, and administer vehicular and pedestrian traffic management during construction.

3. Update project description for the Switch Machine Cabling Project - Procurement of Non-Revenue Equipment component to include procurement of on-rail equipment: five highway-rail trucks, one vacuum truck, two boom lifts, and two scissor lifts.

4. Redistribute the Solutions for Congested Corridors Program funding of $45,150,000 between two components as follows:
    a. Switch Machine Cabling Project - BART Labor ($41,800,000)
    b. Switch Machine Cabling Project - Procurement of Non-Revenue Equipment ($3,350,000)

This amendment is consistent with the Solutions for Congested Corridor Program guidelines.

Background:

On December 2, 2020, the Commission acted to approve the 2020 Solutions for Congested Corridors Program. That action included programming $60 million for the BART Train Control Modernization Program.

During the May 2021 meeting, the Commission acted to approve the allocation of $45,150,000 to one of the Train Control Modernization Program’s project components, the Switch Machine Cabling Contract.

Attachments:

- Attachment A: Resolution G-21-68, Amending Resolution G-21-33
- Attachment B: Updated 2020 Solutions for Congested Corridors Program of Projects

Reference No.: 4.19
December 8-9, 2021
Attachment A

CALIFORNIA TRANSPORTATION COMMISSION
Amendment to the 2020 Solutions for Congested Corridors Program

RESOLUTION G-21-68
Amending Resolution G-21-33

1.1 **WHEREAS,** the California Transportation Commission (Commission) adopted the 2020 Solutions for Congested Corridors Program, Resolution G-20-80, on December 2, 2020; and

1.2 **WHEREAS,** the 2020 Solutions for Congested Corridors Program Guidelines allow Commission staff to bring recommended amendments to the Commission for action; and

1.3 **WHEREAS,** the Commission adopted the updated 2020 Solutions for Congested Corridors Program, Resolution G-21-33, on March 24, 2021; and

1.4 **WHEREAS,** Commission staff, in consultation with staff from the California Department of Transportation and the Bay Area Rapid Transit (BART), has identified changes to the Train Control Modernization Program, as reflected in the updated Program of Projects (Attachment B).

2.1 **NOW, THEREFORE BE IT RESOLVED,** that the Commission approves the program amendment to the 2020 Solutions for Congested Corridors Program, as reflected in Attachment B; and

2.2 **BE IT FURTHER RESOLVED,** that all provisions stipulated in G-20-80 and G-21-33 remain in effect; and

2.3 **BE IT FURTHER RESOLVED,** that Resolution G-21-33 is hereby amended.

County	Applicant Agency	Implementing Agency	Project Title	Project Description	Congested Corridor	Total Project Cost	Total Construction Cost	Total Requested Amount	Total Recommended Funding*	Fiscal Year
Los Angeles	Department of Transportation / Los Angeles County Metropolitan Transportation Authority		I-105 Express Lanes		Rt 105	$ 689,121	$ 626,036	$ 150,000	$ 150,000	
		Los Angeles County Metropolitan Transportation Authority	*I-105 Express Lanes - Construction*	Construct 58.4 miles of HOT lanes					$ 150,000	2022-23
		Los Angeles County Metropolitan Transportation Authority	*I-105 Express Lanes - Roadside Toll Collection System (RTCS)*	Install 20 changeable message signs Install 38 close circuit television cameras Install 16 miles of fiber optics for communications					$ -	2022-23
Marin	Department of Transportation / Transportation Authority of Marin	Caltrans	Marin Sonoma Narrows - Contract B7	Construct 9.5 miles of HOV lanes and other highway improvements Construct 0.75 miles of bicycle and pedestrian facilities	Rt 101	$ 135,641	$ 120,996	$ 40,118	$ 40,118	2021-22
Napa	Metropolitan Transportation Commission / Napa Valley Transportation Authority	Caltrans	Soscol Junction	Construct new interchange with roundabouts and elevated structure Construct Class I multi-use path	Rt 29 Rt 221	$ 64,000	$ 52,555	$ 25,000	$ 25,000	2021-22
Placer / Sacramento	Department of Transportation / Placer County Transportation Planning Agency / Sacramento Area Council of Governments		Placer-Sacramento Gateway - Phase I		Rt 80 Rt 65	$ 135,100	$ 121,888	$ 67,075	$ 67,075	
		Caltrans	*Auburn Boulevard Ramp Meter*	1 Freeway ramp meter, Citrus Heights					$ 500	2021-22
		Citrus Heights	*Auburn Boulevard Complete Streets*	1 miles of complete streets improvements including bicycle and pedestrian facilities					$ 2,860	2021-22
		Roseville	*Dry Creek Greenway*	Construct 2 miles of Class I multi-use trail					$ 6,239	2021-22
		Sacramento County	*Watt Avenue Complete Streets*	4 miles of complete streets improvements including road rehabilitation, bicycle and pedestrian facilities					$ 8,100	2022-23
		Sacramento Regional Transit District	*Watt/I-80 Light Rail Station*	1 Light Rail Station Improvement					$ 7,937	2021-22
		Sacramento Regional Transit District	*Light Rail Modernization - Stations*	4 Light Rail Station Conversions					$ 2,942	2021-22
		Caltrans	*I-80 Transit Reliability*	Construct 1.9 miles of auxiliary lanes					$ 9,503	2021-22
		Roseville	*South Placer Transit*	5 new electric buses 5 express bus station improvements					$ 6,000	2021-22
		Sacramento Regional Transit District	*Light Rail Modernization - Light Rail Vehicles*	8 new low-floor light rail vehicles					$ 22,994	2021-22
San Bernardino	Department of Transportation / San Bernardino County Transportation Authority / Omnitrans		West Valley Connector Bus Rapid Transit		Rt 10	$ 286,966	$ 167,511	$ 65,000	$ 65,000	
		SBCTA	*Mainline Improvements*	Construct 21 new BRT Stations Construct 3.5 miles of new dedicated bus lanes 15.5 miles of enhanced BRT service					$ 65,000	2021-22
		SBCTA	*Maintenance Facility (D/B Contract)*	Maintenance Facility					$ -	2021-22
		SBCTA	*Vehicle Acquisition*	18 new zero-emission buses					$ -	2021-22
San Francisco/ Alameda	Department of Transportation / Bay Area Rapid Transit		Train Control Modernization Program		Rt 80	$ 1,140,000	$ 1,129,051	$ 60,000	$ 60,000	
		~~BART~~	~~*Switch Machine Cabling Contract*~~	~~Cabling upgrades at 21 train control rooms 26 wayside interlocks and switches~~					~~$ 45,150~~	~~2021-22~~
		BART	***Switch Machine Cabling Project - BART Labor***	**Cabling upgrades at 21 train control rooms 26 wayside interlocks and switches**					**$ 41,800**	**2021-22**
		BART	***Switch Machine Cabling Project - Procurement of Non-Revenue Equipment***	**Procure on-rail equipment including: 5 hi-railers, 1 vac truck, 2 boom lifts, 2 scissor lifts**					**$ 3,350**	**2021-22**
		BART	***Switch Machine Cabling Project - Material Procurement***	**Procure materials to replace train control and electrical equipment.**					**$ -**	**2021-22**
		BART	***Switch Machine Cabling Project - Services***	**Quality assurance and control inspections and testing Vehicular/Pedestrian traffic management for construction**					**$ -**	**2021-22**
		BART	*MacArthur/Downtown Oakland Interlock Cabling Upgrade Contract*	Installation of new train control raceways and associated cables					$ 14,850	2021-22
		BART	*Communications-based Train Control*	New communications-based train control system					$ -	2021-22
Santa Cruz	Santa Cruz County Regional Transportation Commission		Watsonville - Santa Cruz Multimodal Corridor Program		Rt 1	$ 150,568	$ 136,360	$ 82,201	$ 92,807	
		Caltrans	*Contract #1 - 41st Avenue to Soquel Avenue Auxiliary Lanes, Bus on Shoulder and Chanticleer Bike/Ped Bridge*	Construct 2.75 miles of hybrid bus-on-shoulder/auxiliary lanes Construct 0.85 of auxiliary lanes Construct 2.7 miles of active transportation facilities and other improvements					$ 23,507	2021-22
		Caltrans	*Contract #2 - State Park to Bay/Porter Auxiliary Lanes, Bus on Shoulders and Mar Vista Bike/Pedestrian Overcrossing*	Construct 3 miles of hybrid bus-on-shoulder/auxiliary lanes Construct 1.2 miles of auxiliary lanes Construct 2.9 miles of active transportation facilities and other improvements Construct 3.2 miles of soundwalls					$ 52,837	2022-23
		Santa Cruz County	*Contract #3 - Soquel Drive Buffered Bike Lane and Congestion Mitigation Project*	Construct 5.1 miles of active transportation facilities and other improvements Adaptive traffic signal control/transit signal priority at 23 intersections					$ 16,463	2022-23
						$ 2,601,396	$ 2,354,397	$ 489,394	$ 500,000	

The yellow highlighted information represents project adjustments associated with book item 4.19

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

MEMORANDUM

To: CHAIR AND COMMISSIONERS
CALIFORNIA TRANSPORTATION COMMISSION

CTC Meeting: December 8-9, 2021

From: STEVEN KECK, Chief Financial Officer

Reference Number: 2.6s.(3), Action Item

Prepared By: Kyle Gradinger, Chief
Division of Rail and Mass Transportation

Subject: **ALLOCATION AMENDMENT FOR A LOCALLY-ADMINISTERED SENATE BILL 1 SOLUTIONS FOR CONGESTED CORRIDORS PROGRAM PROJECT RESOLUTION SCCP-A-2122-06, AMENDING RESOLUTION SCCP-A-2021-04**

ISSUE:

Should the California Transportation Commission (Commission) approve an amendment to separate the locally-administered Senate Bill 1 (SB 1) Solutions for Congested Corridors Program (SCCP) BART Train Control Modernization Program – Switch Machine Cable Contract project (PPNO 2010E), into four separate contracts and allocations, which was initially allocated together in May 2021 under Resolution SCCP-A-2021-04?

RECOMMENDATION:

The California Department of Transportation (Department) recommends that the Commission approve an amendment to separate the locally-administered SB 1 SCCP BART Train Control Modernization Program – Switch Machine Cable Contract project (PPNO 2010E), into four separate contracts and allocations, originally allocated in May 2021 under Resolution SCCP-A-2021-04.

BACKGROUND:

In May 2021, the Commission approved Resolution SCCP-A-2021-04 for a total of $45,150,000 for the construction phase of the BART Train Control Modernization Program – Switch Machine Cable Contract project. However, due to delivery change and schedule differences between components, BART has requested that this contract project be separated out into four contracts and the funding be split out between SB 1 SCCP funding and local funds as shown in the table below:

New Contract Project Name	New PPNO	Funding Source	Allocation amount
Switch Machine Cabling Project – BART Labor	2010E	SCCP	$41,800,000
Switch Machine Cabling Project – Procurement of Non-Revenue Equipment	2010H	SCCP	$3,350,000
		Total SCCP	**$45,150,000**

New Contract Project Name	New PPNO	Funding Source	Allocation amount
Switch Machine Cabling Project – Procurement of Material	2010J	Local Funds	$12,500,000
Switch Machine Cabling Project – Services	2010K	Local Funds	$2,724,000
		Total Local Funds	**$15,224,000**

There is a concurrent SB 1 SCCP Programming Amendment on this month's Commission agenda reflecting the segregation of the contract and the SCCP and local funding into four separate contracts and programming of a total of $60,374,000 for the project as shown below.

Funding Type	Amount
SB 1 SCCP	$45,150,000
Local Funds	$15,224,000
Total for Project	**$60,374,000**

This amendment will segregate out two of the four contracts and the SCCP funding as described above and in accordance with the concurrent SB 1 SCCP Programming Amendment under Resolution G-21-68, which is also on this month's Commission agenda for approval.

FINANCIAL RESOLUTION:

Be it Resolved, that the SB 1 SCCP funds currently allocated to the BART Train Control Modernization Program – Switch Machine Cable Contract project for $45,150,000 are hereby amended, in accordance with the attached vote boxes.

Attachment

2.6 Mass Transportation Financial Matters

Project # / Allocation Amount / Recipient / RTPA/CTC / District-County	Project Title / Location / Project Description	PPNO / Program/Year / Phase / Prgm'd Amount / Project ID	Budget Year / Item # / Fund Type / Program Code	Amount by Fund Type
2.6s.(3)	**Allocation Amendment Senate Bill 1 SCCP Project**			**Resolution SCCP-A-2122-06** **Amending Resolution SCCP-A-2021-04**
1 ~~$45,150,000~~ **$41,800,000** San Francisco Bay Area Rapid Transit District MTC 04-Various	**BART Train Control Modernization Program - Switch Machine Cabling Contract -BART Labor**. In Contra Costa, Alameda, and San Francisco counties. BART Labor needed to support Switch Machine Cabling project during installation and for material transport. This component includes the replacement of switch power supply cabinets, entrance cabinets, switchboards, panelboards, circuit breakers, raceways and cables along the wayside of and in the train control rooms. The project will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Contra Costa and San Francisco counties. The scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor. Outputs / Unit / Total Intersection/Signal improvement(s) / Each / 1 (CEQA - NOE, 01/29/2017) (NEPA - CE, 10/12/2017) SB-1 SCCP Baseline Agreement approved under Resolution SCCP-P-2021-04B; May 2021. Concurrent SB 1 SCCP Baseline Amendment under Resolution SCCP-P-2122-02BA; December 2021. Concurrent SB 1 SCCP Programming Amendment under Resolution G-21-68; December 2021. ~~This project is being implemented using the Design-Build methodology.~~ **Amend Resolution SCCP-A-2021-04 to separate out the contract into four separate contracts (PPNOs 2010E, 2010H, 2010J, and 2010K) and segregate the approved allocation of $45,150,000 as $41,180,0000 for PPNO2010E and $3,350,000 for PPNO 2010H ; PPNOs 2010J and 2010K will be funded with local funding.**	04-2010E SCCP/20-21 CONST ~~$45,150,000~~ **$41,800,000** 0421000231 S T461GA	2019-20 109-0042 SHA 30.10.030.100	~~$45,150,000~~ **$41,800,000**

2.6 Mass Transportation Financial Matters

Project # / Allocation Amount / Recipient / RTPA/CTC / District-County	Project Title / Location / Project Description	PPNO / Program/Year / Phase / Prgm'd Amount / Project ID	Budget Year / Item # / Fund Type / Program Code	Amount by Fund Type
2.6s.(3)	**Allocation Amendment Senate Bill 1 SCCP Project**			**Resolution SCCP-A-2122-06** **Amending Resolution SCCP-A-2021-04**
2 ~~$0~~ **$3,350,000** San Francisco Bay Area Rapid Transit District MTC 04-Various	**BART Train Control Modernization Program - Switch Machine Cabling Project - Procurement of Non-Revenue Equipment**. In Contra Costa, Alameda, and San Francisco counties. Procurement of on-rail equipment (6 Hi-Railers, 1 vac truck, 2 boom lifts, and 2 scissors lifts) needed to support construction crews on Switch Machine Cabling project during installation and for material transport. The project will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Contra Costa and San Francisco counties. The scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor. Outputs / Unit / Total Intersection/Signal improvement(s) / Each / 1 (CEQA - NOE, 01/29/2017) (NEPA - CE, 10/12/2017) SB-1 SCCP Baseline Agreement approved under Resolution SCCP-P-2021-04B; May 2021. Concurrent SB 1 SCCP Baseline Amendment under Resolution SCCP-P-2122-02BA December 2021. Concurrent SB 1 SCCP Programming Amendment under Resolution G-21-68; December 2021. ~~This project is being implemented using the Design-Build methodology.~~ **Amend Resolution SCCP-A-2021-04 to separate out the contract into four separate contracts (PPNOs 2010E, 2010H, 2010J, and 2010K) and segregate the approved allocation of $45,150,000 as $41,180,0000 for PPNO2010E and $3,350,000 for PPNO 2010H ; PPNOs 2010J and 2010K will be funded with local funding.**	04-2010H SCCP/20-21 CONST ~~$0~~ **$3,350,000** 0422000165 S T461GB	2019-20 109-0042 SHA 30.10.030.100	~~$0~~ **$3,350,000**

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0003 v3

Amendment (Existing Project)	☒ YES	☐ NO				Date	03/26/2021 12:28:49
Programs	☐ LPP-C	☐ LPP-F	☐ SCCP	☐ TCEP	☐ STIP	☐ Other	

District	EA	Project ID	PPNO	Nominating Agency	
04			2010F	Caltrans HQ	
County	**Route**	**PM Back**	**PM Ahead**	**Co-Nominating Agency**	
Contra Costa				Metropolitan Transportation Commission	
San Francisco				**MPO**	**Element**
Alameda				MTC	Mass Transit (MT)
Project Manager/Contact			**Phone**	**Email Address**	
Nikki Foletta			510-874-7346	nfolett@bart.gov	

Project Title

BART Train Control Modernization Program - MacArthur/Downtown Oakland Interlock Cabling Upgrade Contract

Location (Project Limits), Description (Scope of Work)

In the city of Oakland. The Downtown Oakland Interlock Upgrade Contract will be implemented at MacArthur and Downtown Oakland BART stations, and will affect service through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Alameda and San Francisco counties. The Downtown Oakland Interlock Upgrade Contract includes installation of new surface mounted train control raceways and associated cables to new Switch Power Supply Cabinets (SPSC) and associated interlock switches will be designed along the K Line from MacArthur Train Control Room to Interlocking K23, K25 and K35. This scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly: 16,17,18,19,20,22,25,14,15	Senate: 7,9,10,11,13	Congressional: 17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase	08/01/2015	08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report	08/01/2015	08/01/2015
End Environmental Phase (PA&ED Milestone)	09/01/2017	09/01/2017
Begin Design (PS&E) Phase	01/01/2020	01/01/2020
End Design Phase (Ready to List for Advertisement Milestone)	01/01/2021	01/01/2021
Begin Right of Way Phase	01/01/2021	01/01/2021
End Right of Way Phase (Right of Way Certification Milestone)	01/01/2021	01/01/2021
Begin Construction Phase (Contract Award Milestone)	02/01/2022	02/01/2022
End Construction Phase (Construction Contract Acceptance Milestone)	06/01/2024	04/01/2024
Begin Closeout Phase	04/01/2024	06/01/2024
End Closeout Phase (Closeout Report)	12/01/2024	12/01/2024

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0003 v3

Date 03/26/2021 12:28:49

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor and Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Additional Information

Project Milestones: Right-of-way acquisition milestones are not applicable to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

PPR ID
ePPR-6000-2021-0003 v3

Performance Indicators and Measures

Measure	Required For	Indicator/Measure	Unit	Build	Future No Build	Change
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63,543,065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0003 v3

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda				2010F

Project Title

BART Train Control Modernization Program - MacArthur/Downtown Oakland Interlock Cabling Upgrade Contract

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON		14,850						14,850	San Francisco Bay Area Rapid Trans
TOTAL		14,850						14,850	
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		14,850						14,850	
TOTAL		14,850						14,850	

Fund #1:	State SB1 SCCP - Solution for Congested Corridors Program (Committed)								Program Code
Existing Funding ($1,000s)									30.10.030.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		14,850						14,850	
TOTAL		14,850						14,850	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		14,850						14,850	
TOTAL		14,850						14,850	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0003 v3

Complete this page for amendments only Date 03/26/2021 12:28:49

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda				2010F

SECTION 1 - All Projects

Project Background

Print ePPR for baseline agreement

Programming Change Requested

Reason for Proposed Change

Print ePPR for baseline agreement

If proposed change will delay one or more components, clearly explain 1) reason for the delay, 2) cost increase related to the delay, and 3) how cost increase will be funded

Other Significant Information

SECTION 2 - For SB1 Project Only

Project Amendment Request (Please follow the individual SB1 program guidelines for specific criteria)

Print ePPR for baseline agreement

Approvals

I hereby certify that the above information is complete and accurate and all approvals have been obtained for the processing of this amendment request.

Name (Print or Type)	Signature	Title	Date

SECTION 3 - All Projects

Attachments
1) Concurrence from Implementing Agency and/or Regional Transportation Planning Agency
2) Project Location Map

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0002 v6

Amendment (Existing Project) ☒ YES ☐ NO | Date 01/07/2022 16:03:30

Programs ☐ LPP-C ☐ LPP-F ☐ SCCP ☐ TCEP ☐ STIP ☐ Other

District	EA	Project ID	PPNO	Nominating Agency	
04			2010E	Caltrans HQ	
County	**Route**	**PM Back**	**PM Ahead**	**Co-Nominating Agency**	
Contra Costa				Metropolitan Transportation Commission	
Alameda				**MPO**	**Element**
San Francisco				MTC	Mass Transit (MT)
Project Manager/Contact			**Phone**	**Email Address**	
Nikki Foletta			510-874-7346	nfolett@bart.gov	

Project Title

BART Train Control Modernization Program - Switch Machine Cabling Project - BART Labor

Location (Project Limits), Description (Scope of Work)

In Contra Costa, Alameda and San Francisco counties. BART labor needed to support Switch Machine Cabling project during installation and for material transport. This Includes replacement of Switch Power Supply Cabinets; Entrance Cabinets; Switchboards, Panelboards and Circuit Breakers; Raceways; and Cables along the wayside and in Train Control Rooms. The project will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Contra Costa, Alameda and San Francisco counties. The scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

The Switch Machine Cabling will include upgrading raceway, power and communication cables at 21 train control rooms and 26 wayside interlocks and associated switches, including the power cable from the Station House Power to the Train Control Rooms in 22 locations.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly: 16,17,18,19,20,22,25,14,15 | Senate: 7,9,10,11,13 | Congressional: 17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase	08/01/2015	08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report	08/01/2015	08/01/2015
End Environmental Phase (PA&ED Milestone)	09/01/2017	09/01/2017
Begin Design (PS&E) Phase	06/01/2018	06/01/2018
End Design Phase (Ready to List for Advertisement Milestone)	07/01/2020	07/01/2020
Begin Right of Way Phase	07/01/2020	07/01/2020
End Right of Way Phase (Right of Way Certification Milestone)	07/01/2020	07/01/2020
Begin Construction Phase (Contract Award Milestone)	07/01/2021	02/01/2022
End Construction Phase (Construction Contract Acceptance Milestone)	12/01/2025	08/01/2026
Begin Closeout Phase	10/01/2025	10/01/2026
End Closeout Phase (Closeout Report)	06/01/2026	04/01/2027

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0002 v6

Date 01/07/2022 16:03:30

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor / Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

Performance Indicators and Measures

Measure	Required For	Indicator/Measure	Unit	Build	Future No Build	Change
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63,543,065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0002 v6

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, Alameda, San Francisco				2010E

Project Title

BART Train Control Modernization Program - Switch Machine Cabling Project - BART Labor

Existing Total Project Cost ($1,000s)									
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON		48,330						48,330	San Francisco Bay Area Rapid Trans
TOTAL		48,330						48,330	
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		41,800						41,800	
TOTAL		41,800						41,800	

Fund #1:	State SB1 SCCP - Solution for Congested Corridors Program (Committed)								Program Code
Existing Funding ($1,000s)									30.10.030.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									$45150 CON voted 05/12/21
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		45,150						45,150	
TOTAL		45,150						45,150	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		41,800						41,800	
TOTAL		41,800						41,800	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0002 v6

Fund #2:	Local Funds - Local Transportation Funds (Committed)								Program Code
Existing Funding ($1,000s)									20.10.400.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									Measure RR
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		3,180						3,180	
TOTAL		3,180						3,180	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0002 v6

Complete this page for amendments only Date 01/07/2022 16:03:30

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, Alameda, San Francisco				2010E

SECTION 1 - All Projects

Project Background

N/A

Programming Change Requested

BART is requesting the work from a 3rd party contract to a force account. Labor done by BART staff.

Reason for Proposed Change

The District received one responsive bid to the Switch Machine Cabling Contract on May 18,2021. The responsive bid was $76,554,812 which is 48% over than the Engineer's Estimate due to current labor market, volatile material cost and risk assumption on the demolition work scope included in Contract.

The Optimal resolution is a hybrid approach to this work to perform the work in a more cost-effective way. BART labor will be used in a Force Account to perform construction work. To support construction scope, smaller 3rd party contracts will be awarded to procure all materials, professional services for Construction Management, hardware, tools, equipment, and appurtenances necessary to allow removal and replacement of existing train control and electrical equipment along the BART Legacy System. The use of District forces will result in a more efficient execution of the work with a high level of safety and experience, as the workforce is already trained and experienced on BART infrastructure and this type of scope. This will allow the District to better control the budget and costs associated with construction and mitigate risks with changes on a contract. All of the scope and benefits described in the agreement will be the same in this hybrid approach.

If proposed change will delay one or more components, clearly explain 1) reason for the delay, 2) cost increase related to the delay, and 3) how cost increase will be funded

Other Significant Information

SECTION 2 - For SB1 Project Only

Project Amendment Request (Please follow the individual SB1 program guidelines for specific criteria)

BART is requesting the work from a 3rd party contract to a force account. The Optimal resolution is a hybrid approach to this work to perform the work in a more cost-effective way.

Approvals

I hereby certify that the above information is complete and accurate and all approvals have been obtained for the processing of this amendment request.

Name (Print or Type)	Signature	Title	Date

PPR ID
ePPR-6000-2021-0002 v6

SECTION 3 - All Projects

Attachments
1) Concurrence from Implementing Agency and/or Regional Transportation Planning Agency
2) Project Location Map

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0012 v1

Amendment (Existing Project) ☐ YES ☒ NO | Date 01/07/2022 16:04:35

Programs ☐ LPP-C ☐ LPP-F ☐ SCCP ☐ TCEP ☐ STIP ☒ Other

District	EA	Project ID	PPNO	Nominating Agency	
04		0422000165	2010E	Caltrans HQ	
County	**Route**	**PM Back**	**PM Ahead**	**Co-Nominating Agency**	
Contra Costa				Metropolitan Transportation Commission	
San Francisco				MPO	Element
Alameda				MTC	Mass Transit (MT)
Project Manager/Contact			**Phone**	**Email Address**	
Nikki Foletta			510-874-7346	nfolett@bart.gov	

Project Title

BART Train Control Modernization Program - Switch Machine Cabling Project - Procurement of Non-Revenue Equipment

Location (Project Limits), Description (Scope of Work)

In Contra Costa, Alameda and San Francisco counties. Procurement of on-rail equipment (5 Hi-Railers, 1 Vac truck, 2 Boom Lifts and 2 Scissor Lifts) needed to support construction crews on Switch Machine Cabling project during installation and for material transport. The project will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Contra Costa, Alameda and San Francisco counties. The scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

The Switch Machine Cabling will include upgrading raceway, power and communication cables at 21 train control rooms and 26 wayside interlocks and associated switches, including the power cable from the Station House Power to the Train Control Rooms in 22 locations.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly: 16,17,18,19,20,22,25,14,15 | Senate: 7,9,10,11,13 | Congressional: 17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase	08/01/2015	08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report	08/01/2015	08/01/2015
End Environmental Phase (PA&ED Milestone)	09/01/2017	09/01/2017
Begin Design (PS&E) Phase	06/01/2018	06/01/2018
End Design Phase (Ready to List for Advertisement Milestone)	07/01/2020	07/01/2020
Begin Right of Way Phase	07/01/2020	07/01/2020
End Right of Way Phase (Right of Way Certification Milestone)	07/01/2020	07/01/2020
Begin Construction Phase (Contract Award Milestone)	07/01/2021	05/01/2022
End Construction Phase (Construction Contract Acceptance Milestone)	12/01/2025	08/01/2026
Begin Closeout Phase	10/01/2025	10/01/2026
End Closeout Phase (Closeout Report)	06/01/2026	04/01/2027

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0012 v1

Date 01/07/2022 16:04:35

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor / Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Date 01/07/2022 16:04:35

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0012 v1

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63,543,065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0012 v1

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda			0422000165	2010E

Project Title

BART Train Control Modernization Program - Switch Machine Cabling Project - Procurement of Non-Revenue Equipment

Existing Total Project Cost ($1,000s)									
Component	Prior	20-21	21-22	22-23	23-24	24-25	25-26+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON									San Francisco Bay Area Rapid Trans
TOTAL									
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON			3,350					3,350	
TOTAL			3,350					3,350	

Fund #1:	State SB1 SCCP - Solution for Congested Corridors Program (Committed)								Program Code
Existing Funding ($1,000s)									30.10.030.100
Component	Prior	20-21	21-22	22-23	23-24	24-25	25-26+	Total	Funding Agency
E&P (PA&ED)									
PS&E									$45150 CON voted 05/12/21
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON			3,350					3,350	
TOTAL			3,350					3,350	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0012 v1

Fund #2:	Local Funds - Local Transportation Funds (Committed)								Program Code
Existing Funding ($1,000s)									20.10.400.100
Component	Prior	20-21	21-22	22-23	23-24	24-25	25-26+	Total	Funding Agency
E&P (PA&ED)									
PS&E									Measure RR
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0013 v1

Amendment (Existing Project) ☐ YES ☒ NO						Date	01/07/2022 16:05:15
Programs ☐ LPP-C ☐ LPP-F ☐ SCCP ☐ TCEP ☐ STIP ☒ Other							
District	EA	Project ID	PPNO	Nominating Agency			
04		0422000189		Caltrans HQ			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
Contra Costa				Metropolitan Transportation Commission			
San Francisco				MPO	Element		
Alameda				MTC	Mass Transit (MT)		
Project Manager/Contact			Phone	Email Address			
Nikki Foletta			510-874-7346	nfolett@bart.gov			

Project Title

BART Train Control Modernization Program - Switch Machine Cabling Project - Procurement of Material

Location (Project Limits), Description (Scope of Work)

In Contra Costa, Alameda and San Francisco counties. Procurement of all materials needed to support construction crews on Switch Machine Cabling project during installation and for material transport. The project will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Contra Costa, Alameda and San Francisco counties. The scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly:	16,17,18,19,20,22,25,14,15	Senate:	7,9,10,11,13	Congressional:	17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase	08/01/2015	08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report	08/01/2015	08/01/2015
End Environmental Phase (PA&ED Milestone)	09/01/2017	09/01/2017
Begin Design (PS&E) Phase	06/01/2018	06/01/2018
End Design Phase (Ready to List for Advertisement Milestone)	07/01/2020	07/01/2020
Begin Right of Way Phase	07/01/2020	07/01/2020
End Right of Way Phase (Right of Way Certification Milestone)	07/01/2020	07/01/2020
Begin Construction Phase (Contract Award Milestone)	07/01/2021	05/01/2022
End Construction Phase (Construction Contract Acceptance Milestone)	12/01/2025	08/01/2026
Begin Closeout Phase	10/01/2025	10/01/2026
End Closeout Phase (Closeout Report)	06/01/2026	04/01/2027

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0013 v1

Date 01/07/2022 16:05:15

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor / Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Date 01/07/2022 16:05:15

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

PPR ID
ePPR-6000-2020-0013 v1

Performance Indicators and Measures

Measure	Required For	Indicator/Measure	Unit	Build	Future No Build	Change
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63,543,065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0013 v1

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda			0422000189	

Project Title

BART Train Control Modernization Program - Switch Machine Cabling Project - Procurement of Material

Existing Total Project Cost ($1,000s)									
Component	Prior	20-21	21-22	22-23	23-24	24-25	25-26+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON									San Francisco Bay Area Rapid Trans
TOTAL									
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON			12,500					12,500	
TOTAL			12,500					12,500	

Fund #1:	State SB1 SCCP - Solution for Congested Corridors Program (Committed)								Program Code
Existing Funding ($1,000s)									30.10.030.100
Component	Prior	20-21	21-22	22-23	23-24	24-25	25-26+	Total	Funding Agency
E&P (PA&ED)									
PS&E									$45150 CON voted 05/12/21
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

PPR ID
ePPR-6000-2020-0013 v1

Fund #2:	Local Funds - Local Transportation Funds (Committed)								Program Code
	Existing Funding ($1,000s)								20.10.400.100
Component	Prior	20-21	21-22	22-23	23-24	24-25	25-26+	Total	Funding Agency
E&P (PA&ED)									
PS&E									Measure RR
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON			5,875					5,875	
TOTAL			5,875					5,875	

Fund #3:	FTA Funds - Capital Investment Grants Program (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	20-21	21-22	22-23	23-24	24-25	25-26+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON			6,625					6,625	
TOTAL			6,625					6,625	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0014 v1

Amendment (Existing Project) ☐ YES ☒ NO						Date	01/07/2022 16:05:59
Programs ☐ LPP-C ☐ LPP-F ☐ SCCP ☐ TCEP ☐ STIP ☒ Other							
District	EA	Project ID	PPNO	Nominating Agency			
04		0422000190		Caltrans HQ			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
Contra Costa				Metropolitan Transportation Commission			
San Francisco				MPO		Element	
Alameda				MTC		Mass Transit (MT)	
Project Manager/Contact			Phone	Email Address			
Nikki Foletta			510-874-7346	nfolett@bart.gov			

Project Title

BART Train Control Modernization Program - Switch Machine Cabling Project - Services

Location (Project Limits), Description (Scope of Work)

In Contra Costa, Alameda and San Francisco counties. Procurement of Services needed to support construction crews on Switch Machine Cabling project during installation and for material transport. The project will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Contra Costa, Alameda and San Francisco counties. The scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly:	16,17,18,19,20,22,25,14,15	Senate:	7,9,10,11,13	Congressional:	17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase	08/01/2015	08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report	08/01/2015	08/01/2015
End Environmental Phase (PA&ED Milestone)	09/01/2017	09/01/2017
Begin Design (PS&E) Phase	06/01/2018	06/01/2018
End Design Phase (Ready to List for Advertisement Milestone)	07/01/2020	07/01/2020
Begin Right of Way Phase	07/01/2020	07/01/2020
End Right of Way Phase (Right of Way Certification Milestone)	07/01/2020	07/01/2020
Begin Construction Phase (Contract Award Milestone)	07/01/2021	05/01/2022
End Construction Phase (Construction Contract Acceptance Milestone)	12/01/2025	08/01/2026
Begin Closeout Phase	10/01/2025	10/01/2026
End Closeout Phase (Closeout Report)	06/01/2026	04/01/2027

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0014 v1

Date 01/07/2022 16:05:59

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor / Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Date 01/07/2022 16:05:59

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0014 v1

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63,543,065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2020-0014 v1

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda			0422000190	

Project Title

BART Train Control Modernization Program - Switch Machine Cabling Project - Services

Existing Total Project Cost ($1,000s)									
Component	Prior	20-21	21-22	22-23	23-24	24-25	25-26+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON									San Francisco Bay Area Rapid Trans
TOTAL									
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON			2,724					2,724	
TOTAL			2,724					2,724	

Fund #1:	State SB1 SCCP - Solution for Congested Corridors Program (Committed)								Program Code
Existing Funding ($1,000s)									30.10.030.100
Component	Prior	20-21	21-22	22-23	23-24	24-25	25-26+	Total	Funding Agency
E&P (PA&ED)									
PS&E									$45150 CON voted 05/12/21
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

PPR ID
ePPR-6000-2020-0014 v1

Fund #2:	Local Funds - Local Transportation Funds (Committed)								Program Code
	Existing Funding ($1,000s)								20.10.400.100
Component	Prior	20-21	21-22	22-23	23-24	24-25	25-26+	Total	Funding Agency
E&P (PA&ED)									
PS&E									Measure RR
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON			1,280					1,280	
TOTAL			1,280					1,280	

Fund #3:	FTA Funds - Capital Investment Grants Program (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	20-21	21-22	22-23	23-24	24-25	25-26+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON			1,444					1,444	
TOTAL			1,444					1,444	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0004 v3

Amendment (Existing Project) ☒ YES ☐ NO | Date 04/02/2021 16:05:52

Programs ☐ LPP-C ☐ LPP-F ☐ SCCP ☐ TCEP ☐ STIP ☐ Other

District	EA	Project ID	PPNO	Nominating Agency	
04			2010G	Caltrans HQ	
County	**Route**	**PM Back**	**PM Ahead**	**Co-Nominating Agency**	
Contra Costa				Metropolitan Transportation Commission	
San Francisco				MPO	Element
Alameda				MTC	Mass Transit (MT)
Project Manager/Contact			**Phone**	**Email Address**	
Nikki Foletta			510-874-7346	nfolett@bart.gov	

Project Title

BART Train Control Modernization Program - Communication Based Train Control (CBTC) Contract

Location (Project Limits), Description (Scope of Work)

In Alameda and San Francisco counties. The CBTC Contract will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is located in Alameda and San Francisco counties. The CBTC Contract will replace the existing train control system with a new communications-based train control system, allowing BART to achieve the shorter headways needed to operate more regularly scheduled trains through the Transbay Corridor. This scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly:	Senate:	Congressional:
16,17,18,19,20,22,25,14,15	7,9,10,11,13	17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase	08/01/2015	08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report	08/01/2015	08/01/2015
End Environmental Phase (PA&ED Milestone)	09/01/2017	09/01/2017
Begin Design (PS&E) Phase	09/01/2017	09/01/2017
End Design Phase (Ready to List for Advertisement Milestone)	09/01/2017	09/01/2017
Begin Right of Way Phase	09/01/2017	09/01/2017
End Right of Way Phase (Right of Way Certification Milestone)	09/01/2017	09/01/2017
Begin Construction Phase (Contract Award Milestone)	08/01/2020	08/01/2020
End Construction Phase (Construction Contract Acceptance Milestone)	08/01/2031	08/01/2031
Begin Closeout Phase	09/01/2031	09/01/2031
End Closeout Phase (Closeout Report)	12/01/2031	12/01/2031

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0004 v3

Date 04/02/2021 16:05:52

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor and Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Additional Information

Communication Based Train Control (CBTC) contract is a design-build contract.
Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	0	0	0
			Hours per Capita	63,543,065	0	63,543,065
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0004 v3

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda				2010G

Project Title

BART Train Control Modernization Program - Communication Based Train Control (CBTC) Contract

Existing Total Project Cost ($1,000s)									
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E	12,129							12,129	San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON		1,065,871						1,065,871	San Francisco Bay Area Rapid Trans
TOTAL	12,129	1,065,871						1,078,000	
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E	12,129							12,129	
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		1,065,871						1,065,871	
TOTAL	12,129	1,065,871						1,078,000	

Fund #1:	Other State - Transit and Intercity Rail Capital Program (TIRCP) (Committed)								Program Code
Existing Funding ($1,000s)									20.30.207.811
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		318,600						318,600	
TOTAL		318,600						318,600	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		318,600						318,600	
TOTAL		318,600						318,600	

PPR ID
ePPR-6000-2021-0004 v3

Fund #2:	Local Funds - Bart Revenue (Committed)								Program Code
	Existing Funding ($1,000s)								20.10.400.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E	12,129							12,129	
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		40,797						40,797	
TOTAL	12,129	40,797						52,926	
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E	12,129							12,129	
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		40,797						40,797	
TOTAL	12,129	40,797						52,926	

Fund #3:	Local Funds - Local Transportation Funds (Committed)								Program Code
	Existing Funding ($1,000s)								20.10.400.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		309,234						309,234	
TOTAL		309,234						309,234	
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		309,234						309,234	
TOTAL		309,234						309,234	

PPR ID
ePPR-6000-2021-0004 v3

Fund #4:	FTA Funds - FTA - 5309(b) - New Starts Small Starts and Core (Committed)								Program Code
	Existing Funding ($1,000s)								FTA-TRANSIT
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		397,240						397,240	
TOTAL		397,240						397,240	
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		397,240						397,240	
TOTAL		397,240						397,240	

Fund #5:	State SB1 SCCP - Solution for Congested Corridors Program (Committed)								Program Code
	Existing Funding ($1,000s)								30.10.030.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0004 v3

Complete this page for amendments only Date 04/02/2021 16:05:52

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda				2010G

SECTION 1 - All Projects

Project Background

Print ePPR for baseline agreement.

Programming Change Requested

Print ePPR for baseline agreement.

Reason for Proposed Change

Print ePPR for baseline agreement.

If proposed change will delay one or more components, clearly explain 1) reason for the delay, 2) cost increase related to the delay, and 3) how cost increase will be funded

Other Significant Information

SECTION 2 - For SB1 Project Only

Project Amendment Request (Please follow the individual SB1 program guidelines for specific criteria)

Print ePPR for baseline agreement.

Approvals

I hereby certify that the above information is complete and accurate and all approvals have been obtained for the processing of this amendment request.

Name (Print or Type)	Signature	Title	Date

SECTION 3 - All Projects

Attachments
1) Concurrence from Implementing Agency and/or Regional Transportation Planning Agency
2) Project Location Map

ROAD REPAIR AND ACCOUNTABILITY ACT OF 2017
PROJECT BASELINE AGREEMENT
Train Control Modernization Program

Resolution SCCP-P-2021-04B
(will be completed by CTC)

1. FUNDING PROGRAM

- ☐ Active Transportation Program
- ☐ Local Partnership Program (Competitive)
- ☒ Solutions for Congested Corridors Program
- ☐ State Highway Operation and Protection Program
- ☐ Trade Corridor Enhancement Program

2. PARTIES AND DATE

2.1 This Project Baseline Agreement (Agreement) for the *Train Control Modernization Program*, effective on, May 13, 2021 (will be completed by CTC), is made by and between the California Transportation Commission (Commission), the California Department of Transportation (Caltrans), the Project Applicant, *San Francisco Bay Area Rapid Transit District*, and the Implementing Agency, *San Francisco Bay Area Rapid Transit District*, sometimes collectively referred to as the "Parties".

3. RECITAL

3.2 Whereas at its May 13, 2021 meeting the Commission approved the Solutions for Congested Corridors Program, and included in this program of projects the *Train Control Modernization Program*, the parties are entering into this Project Baseline Agreement to document the project cost, schedule, scope and benefits, as detailed on the Project Programming Request Form attached hereto as Exhibit A and the Project Report attached hereto as Exhibit B, as the baseline for project monitoring by the Commission.

3.3 The undersigned Project Applicant certifies that the funding sources cited are committed and expected to be available; the estimated costs represent full project funding; and the scope and description of benefits is the best estimate possible.

4. GENERAL PROVISIONS

The Project Applicant, Implementing Agency, and Caltrans agree to abide by the following provisions:

4.1 To meet the requirements of the Road Repair and Accountability Act of 2017 (Senate Bill [SB] 1, Chapter 5, Statutes of 2017) which provides the first significant, stable, and on-going increase in state transportation funding in more than two decades.

4.2 To adhere, as applicable, to the provisions of the Commission:

- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the Active Transportation Program", dated
- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the Local Partnership Program", dated
- ☒ Resolution G-20-80, "Adoption of Program of Projects for the Solutions for Congested Corridors Program", dated December 3, 2020
- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the State Highway Operation and Protection Program", dated
- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the Trade Corridor Enhancement Program", dated

4.3 All signatories agree to adhere to the Commission's Solutions for Congested Corridors Program, Guidelines. Any conflict between the programs will be resolved at the discretion of the Commission.

4.4 All signatories agree to adhere to the Commission's SB 1 Accountability and Transparency Guidelines and policies, and program and project amendment processes.

4.5 The San Francisco Bay Area Rapid Transit District agrees to secure funds for any additional costs of the project.

4.6 The San Francisco Bay Area Rapid Transit District agrees to report to Caltrans on a quarterly basis; after July 2019, reports will be on a semi-annual basis on the progress made toward the implementation of the project, including scope, cost, schedule, outcomes, and anticipated benefits.

4.7 Caltrans agrees to prepare program progress reports on a quarterly basis; after July 2019, reports will be on a semi-annual basis and include information appropriate to assess the current state of the overall program and the current status of each project identified in the program report.

4.8 The San Francisco Bay Area Rapid Transit District agrees to submit a timely Completion Report and Final Delivery Report as specified in the Commission's SB 1 Accountability and Transparency Guidelines.

4.9 All signatories agree to maintain and make available to the Commission and/or its designated representative, all work related documents, including without limitation engineering, financial and other data, and methodologies and assumptions used in the determination of project benefits during the course of the project, and retain those records for four years from the date of the final closeout of the project. Financial records will be maintained in accordance with Generally Accepted Accounting Principles.

4.10 The Transportation Inspector General of the Independent Office of Audits and Investigations has the right to audit the project records, including technical and financial data, of the Department of Transportation, the Project Applicant, the Implementing Agency, and any consultant or sub-consultants at any time during the course of the project and for four years from the date of the final closeout of the project, therefore all project records shall be maintained and made available at the time of request. Audits will be conducted in accordance with Generally Accepted Government Auditing Standards.

5. SPECIFIC PROVISIONS AND CONDITIONS

5.1 Project Schedule and Cost
See Project Programming Request Form, attached as Exhibit A.

5.2 Project Scope
See Project Report or equivalent, attached as Exhibit B. At a minimum, the attachment shall include the cover page, evidence of approval, executive summary, and a link to or electronic copy of the full document.

5.3 Other Project Specific Provisions and Conditions

Attachments:

Exhibit A: Project Programming Request Form
Exhibit B: Project Report

SIGNATURE PAGE
TO
PROJECT BASELINE AGREEMENT

Train Control Modernization Program

Resolution SCCP-P-2021-04B

Robert M. Powers — 31 March 2021

Robert Powers — Date

General Manager

Project Applicant

Robert M. Powers — 31 March 2021

Robert Powers — Date

General Manager

Implementing Agency

Dina A. El-Tawansy — 4/1/2021

Dina A. El-Tawansy — Date

District Director

California Department of Transportation

Toks Omishakin — 05-04-21

Toks Omishakin — Date

Director

California Department of Transportation

Mitchell Weiss — 05/19/21

Mitchell Weiss — Date

Executive Director

California Transportation Commission

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0004 v3

Amendment (Existing Project) ☒ YES ☐ NO						Date	04/08/2021 14:06:09
Programs ☐ LPP-C	☐ LPP-F	☐ SCCP	☐ TCEP	☐ STIP	☐ Other		
District	EA	Project ID	PPNO	Nominating Agency			
04			2010G	Caltrans HQ			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
Contra Costa				Metropolitan Transportation Commission			
San Francisco				MPO		Element	
Alameda				MTC		Mass Transit (MT)	
Project Manager/Contact			Phone	Email Address			
Nikki Foletta			510-874-7346	nfolett@bart.gov			

Project Title

BART Train Control Modernization Program - Communication Based Train Control (CBTC) Contract

Location (Project Limits), Description (Scope of Work)

In Alameda and San Francisco counties. The CBTC Contract will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is located in Alameda and San Francisco counties. The CBTC Contract will replace the existing train control system with a new communications-based train control system, allowing BART to achieve the shorter headways needed to operate more regularly scheduled trains through the Transbay Corridor. This scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly: 16,17,18,19,20,22,25,14,15	Senate: 7,9,10,11,13	Congressional: 17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase	08/01/2015	08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report	08/01/2015	08/01/2015
End Environmental Phase (PA&ED Milestone)	09/01/2017	09/01/2017
Begin Design (PS&E) Phase	09/01/2017	09/01/2017
End Design Phase (Ready to List for Advertisement Milestone)	09/01/2017	09/01/2017
Begin Right of Way Phase	09/01/2017	09/01/2017
End Right of Way Phase (Right of Way Certification Milestone)	09/01/2017	09/01/2017
Begin Construction Phase (Contract Award Milestone)	08/01/2020	08/01/2020
End Construction Phase (Construction Contract Acceptance Milestone)	08/01/2031	08/01/2031
Begin Closeout Phase	09/01/2031	09/01/2031
End Closeout Phase (Closeout Report)	12/01/2031	12/01/2031

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0004 v3

Date 04/08/2021 14:06:09

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor and Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Additional Information

Communication Based Train Control (CBTC) contract is a design-build contract.
Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	0	0	0
			Hours per Capita	63,543,065	0	63,543,065
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0004 v3

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda				2010G

Project Title

BART Train Control Modernization Program - Communication Based Train Control (CBTC) Contract

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total
E&P (PA&ED)								
PS&E	12,129							12,129
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		1,065,871						1,065,871
TOTAL	12,129	1,065,871						1,078,000

Proposed Total Project Cost ($1,000s)								
E&P (PA&ED)								
PS&E	12,129							12,129
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		1,065,871						1,065,871
TOTAL	12,129	1,065,871						1,078,000

Implementing Agency
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans

Notes

Fund #1:	Other State - Transit and Intercity Rail Capital Program (TIRCP) (Committed)							
Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		318,600						318,600
TOTAL		318,600						318,600

Proposed Funding ($1,000s)								
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		318,600						318,600
TOTAL		318,600						318,600

Program Code
20.30.207.811

Funding Agency

Notes

Fund #2:	Local Funds - Bart Revenue (Committed)								Program Code
	Existing Funding ($1,000s)								20.10.400.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E	12,129							12,129	
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		40,797						40,797	
TOTAL	12,129	40,797						52,926	
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E	12,129							12,129	
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		40,797						40,797	
TOTAL	12,129	40,797						52,926	

Fund #3:	Local Funds - Local Transportation Funds (Committed)								Program Code
	Existing Funding ($1,000s)								20.10.400.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		309,234						309,234	
TOTAL		309,234						309,234	
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		309,234						309,234	
TOTAL		309,234						309,234	

Fund #4:	FTA Funds - FTA - 5309(b) - New Starts Small Starts and Core (Committed)								Program Code
	Existing Funding ($1,000s)								FTA-TRANSIT
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		397,240						397,240	
TOTAL		397,240						397,240	
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		397,240						397,240	
TOTAL		397,240						397,240	

Fund #5:	State SB1 SCCP - Solution for Congested Corridors Program (Committed)								Program Code
	Existing Funding ($1,000s)								30.10.030.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0004 v3

Complete this page for amendments only Date 04/08/2021 14:06:09

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda				2010G

SECTION 1 - All Projects

Project Background

Print ePPR for baseline agreement.

Programming Change Requested

Print ePPR for baseline agreement.

Reason for Proposed Change

Print ePPR for baseline agreement.

If proposed change will delay one or more components, clearly explain 1) reason for the delay, 2) cost increase related to the delay, and 3) how cost increase will be funded

Other Significant Information

SECTION 2 - For SB1 Project Only

Project Amendment Request (Please follow the individual SB1 program guidelines for specific criteria)

Print ePPR for baseline agreement.

Approvals

I hereby certify that the above information is complete and accurate and all approvals have been obtained for the processing of this amendment request.

Name (Print or Type)	Signature	Title	Date

SECTION 3 - All Projects

Attachments
1) Concurrence from Implementing Agency and/or Regional Transportation Planning Agency
2) Project Location Map

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0003 v3

Amendment (Existing Project) ☒ YES ☐ NO | Date 04/08/2021 13:47:07

Programs ☐ LPP-C ☐ LPP-F ☐ SCCP ☐ TCEP ☐ STIP ☐ Other

District	EA	Project ID	PPNO	Nominating Agency	
04			2010F	Caltrans HQ	
County	**Route**	**PM Back**	**PM Ahead**	**Co-Nominating Agency**	
Contra Costa				Metropolitan Transportation Commission	
San Francisco				**MPO**	**Element**
Alameda				MTC	Mass Transit (MT)
Project Manager/Contact			**Phone**	**Email Address**	
Nikki Foletta			510-874-7346	nfolett@bart.gov	

Project Title

BART Train Control Modernization Program - MacArthur/Downtown Oakland Interlock Cabling Upgrade Contract

Location (Project Limits), Description (Scope of Work)

In the city of Oakland. The Downtown Oakland Interlock Upgrade Contract will be implemented at MacArthur and Downtown Oakland BART stations, and will affect service through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Alameda and San Francisco counties. The Downtown Oakland Interlock Upgrade Contract includes installation of new surface mounted train control raceways and associated cables to new Switch Power Supply Cabinets (SPSC) and associated interlock switches will be designed along the K Line from MacArthur Train Control Room to Interlocking K23, K25 and K35. This scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly: 16,17,18,19,20,22,25,14,15 | Senate: 7,9,10,11,13 | Congressional: 17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase	08/01/2015	08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report	08/01/2015	08/01/2015
End Environmental Phase (PA&ED Milestone)	09/01/2017	09/01/2017
Begin Design (PS&E) Phase	01/01/2020	01/01/2020
End Design Phase (Ready to List for Advertisement Milestone)	01/01/2021	01/01/2021
Begin Right of Way Phase	01/01/2021	01/01/2021
End Right of Way Phase (Right of Way Certification Milestone)	01/01/2021	01/01/2021
Begin Construction Phase (Contract Award Milestone)	02/01/2022	02/01/2022
End Construction Phase (Construction Contract Acceptance Milestone)	06/01/2024	04/01/2024
Begin Closeout Phase	04/01/2024	06/01/2024
End Closeout Phase (Closeout Report)	12/01/2024	12/01/2024

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0003 v3

Date 04/08/2021 13:47:07

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor and Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Additional Information

Project Milestones: Right-of-way acquisition milestones are not applicable to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63,543,065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0003 v3

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda				2010F

Project Title

BART Train Control Modernization Program - MacArthur/Downtown Oakland Interlock Cabling Upgrade Contract

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON		14,850						14,850	San Francisco Bay Area Rapid Trans
TOTAL		14,850						14,850	
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		14,850						14,850	
TOTAL		14,850						14,850	

Fund #1:	State SB1 SCCP - Solution for Congested Corridors Program (Committed)								Program Code
Existing Funding ($1,000s)									30.10.030.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		14,850						14,850	
TOTAL		14,850						14,850	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		14,850						14,850	
TOTAL		14,850						14,850	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0003 v3

Complete this page for amendments only Date 04/08/2021 13:47:07

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda				2010F

SECTION 1 - All Projects

Project Background

Print ePPR for baseline agreement

Programming Change Requested

Reason for Proposed Change

Print ePPR for baseline agreement

If proposed change will delay one or more components, clearly explain 1) reason for the delay, 2) cost increase related to the delay, and 3) how cost increase will be funded

Other Significant Information

SECTION 2 - For SB1 Project Only

Project Amendment Request (Please follow the individual SB1 program guidelines for specific criteria)

Print ePPR for baseline agreement

Approvals

I hereby certify that the above information is complete and accurate and all approvals have been obtained for the processing of this amendment request.

Name (Print or Type)	Signature	Title	Date

SECTION 3 - All Projects

Attachments
1) Concurrence from Implementing Agency and/or Regional Transportation Planning Agency
2) Project Location Map

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0002 v4

Amendment (Existing Project)	☒ YES	☐ NO				Date	04/08/2021 14:04:43
Programs	☐ LPP-C	☐ LPP-F	☐ SCCP	☐ TCEP	☐ STIP	☐ Other	

District	EA	Project ID	PPNO	Nominating Agency	
04			2010E	Caltrans HQ	
County	**Route**	**PM Back**	**PM Ahead**	**Co-Nominating Agency**	
Contra Costa				Metropolitan Transportation Commission	
San Francisco				MPO	Element
Alameda				MTC	Mass Transit (MT)

Project Manager/Contact	Phone	Email Address
Nikki Foletta	510-874-7346	nfolett@bart.gov

Project Title

BART Train Control Modernization Program - Switch Machine Cabling Contract

Location (Project Limits), Description (Scope of Work)

In Alameda and San Francisco counties. The Switch Machine Cabling Contract will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Alameda and San Francisco counties. The Switch Machine Cabling contract will include upgrading raceway, power and communication cables at 21 train control rooms and 26 wayside interlocks and associated switches, including the power cable from the Station House Power to the Train Control Rooms in 22 locations. This scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly: 16,17,18,19,20,22,25,14,15	Senate: 7,9,10,11,13	Congressional: 17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase	08/01/2015	08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report	08/01/2015	08/01/2015
End Environmental Phase (PA&ED Milestone)	09/01/2017	09/01/2017
Begin Design (PS&E) Phase	06/01/2018	06/01/2018
End Design Phase (Ready to List for Advertisement Milestone)	07/01/2020	07/01/2020
Begin Right of Way Phase	07/01/2020	07/01/2020
End Right of Way Phase (Right of Way Certification Milestone)	07/01/2020	07/01/2020
Begin Construction Phase (Contract Award Milestone)	07/01/2021	07/01/2021
End Construction Phase (Construction Contract Acceptance Milestone)	12/01/2025	10/01/2025
Begin Closeout Phase	10/01/2025	12/01/2025
End Closeout Phase (Closeout Report)	06/01/2026	06/01/2026

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0002 v4

Date 04/08/2021 14:04:43

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor / Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Additional Information

Project Milestones: Right-of-way acquisition milestones are not applicable to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63,543,065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0002 v4

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda				2010E

Project Title

BART Train Control Modernization Program - Switch Machine Cabling Contract

Existing Total Project Cost ($1,000s)									
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON		48,330						48,330	San Francisco Bay Area Rapid Trans
TOTAL		48,330						48,330	
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		48,330						48,330	
TOTAL		48,330						48,330	

Fund #1:	State SB1 SCCP - Solution for Congested Corridors Program (Committed)								Program Code
Existing Funding ($1,000s)									30.10.030.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		45,150						45,150	
TOTAL		45,150						45,150	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		45,150						45,150	
TOTAL		45,150						45,150	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0002 v4

Fund #2:	Local Funds - Local Transportation Funds (Committed)								Program Code
Existing Funding ($1,000s)									20.10.400.100
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									Measure RR
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		3,180						3,180	
TOTAL		3,180						3,180	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		3,180						3,180	
TOTAL		3,180						3,180	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6000-2021-0002 v4

Complete this page for amendments only Date 04/08/2021 14:04:43

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, San Francisco, Alameda				2010E

SECTION 1 - All Projects

Project Background

Print ePPR for baseline agreement

Programming Change Requested

Reason for Proposed Change

Print ePPR for baseline agreement

If proposed change will delay one or more components, clearly explain 1) reason for the delay, 2) cost increase related to the delay, and 3) how cost increase will be funded

Other Significant Information

SECTION 2 - For SB1 Project Only

Project Amendment Request (Please follow the individual SB1 program guidelines for specific criteria)

Print ePPR for baseline agreement

Approvals

I hereby certify that the above information is complete and accurate and all approvals have been obtained for the processing of this amendment request.

Name (Print or Type)	Signature	Title	Date

SECTION 3 - All Projects

Attachments
1) Concurrence from Implementing Agency and/or Regional Transportation Planning Agency
2) Project Location Map

Train Control Modernization Program

2020 Solutions for Congested Corridors Program

Submitted by:
San Francisco Bay Area Rapid Transit District
California Department of Transportation
Metropolitan Transportation Commission

Application Date:
July 2020

Table of Contents

Table of Figures

Table of Tables

Caltrans | METROPOLITAN TRANSPORTATION COMMISSION | BART

Mr. Mitch Weiss
Executive Director
California Transportation Commission
1120 N Street, MS-52
Sacramento, CA 95814

Re: BART Train Control Modernization Program for Congested Corridors Program Submittal

Dear Mr. Weiss:

The California Department of Transportation (Caltrans), the Metropolitan Transportation Commission (MTC), and the San Francisco Bay Area Rapid Transit District (BART) are pleased to submit this application for the BART Train Control Modernization Program (project) in San Francisco and Alameda Counties under the Senate Bill 1 (SB 1) Solutions for Congested Corridors Program (SCCP). The request is for $60 million in SCCP funding. BART will be the implementing agency with co-sponsorship from Caltrans and MTC. Any cost overruns above the allocated amounts for the project will be covered by BART, with no additional funding from the SCCP.

The project focuses on the Transbay Corridor and will replace the existing train control systems with a new communications-based train control system, as well as updating train control power cables and interlock cables within existing right-of-way. This will allow BART to achieve shorter headways on the trunk line between Daly City and Downtown Oakland. The project is included in BART's Hybrid Summary Comprehensive Multimodal Corridor Plan, which was created in accordance with the California Transportation Commission (CTC) Solutions for Congested Corridors Program guidelines and is also included in the Regional Transportation Plan, *Plan Bay Area 2040*. The Environmental Process and 30% Design phases were completed in 2017 and the Construction phase is slated to begin in 2021.

The project is part of a wide-ranging program of BART projects that will increase capacity, relieve congestion and crowding, increase transit ridership, and decrease greenhouse gas (GHG) emissions and vehicle miles traveled (VMT) by increasing the frequency and capacity of trains operating through the BART Transbay Tube. The project will increase the number of trains operating through the Transbay Tube during the peak period from 23 to 28 per hour. This, along with BART's new vehicle procurement, will enable peak

hour train lengths to be increased from an average of 8.9 cars to 10, which will maximize throughput capacity in the most congested travel corridor in the San Francisco Bay Area. Alongside the increase of corridor capacity is the complete replacement of BART's aging and obsolete equipment with a communications-based system that will allow trains to run closer together safely. With the new equipment, BART will be able to provide reliable, consistent, and safe transit services for San Francisco Bay Area residents that will result in less environmental impact and better connections to other transit services in the region.

We greatly appreciate the California Transportation Commission's (CTC) consideration of the requested investment in this project, as it is a critical component of the transportation infrastructure for the most congested corridor in the Northern California Megaregion. We believe the project is a strong candidate for SB 1 SCCP funding.

The signatures below confirm support from Caltrans, MTC, and BART, and the undersigned hereby submit for CTC's consideration the application and the Project Programming Request forms, including the project description, funding profile, and completion dates.

Sincerely,

TOKS OMISHAKIN
Director
California Department of Transportation

7-16-2020
Date

TONY TAVARES
District Director
California Department of Transportation
District 4

6-30-2020
Date

THERESE W. MCMILLAN
Executive Director
Metropolitan Transportation Commission

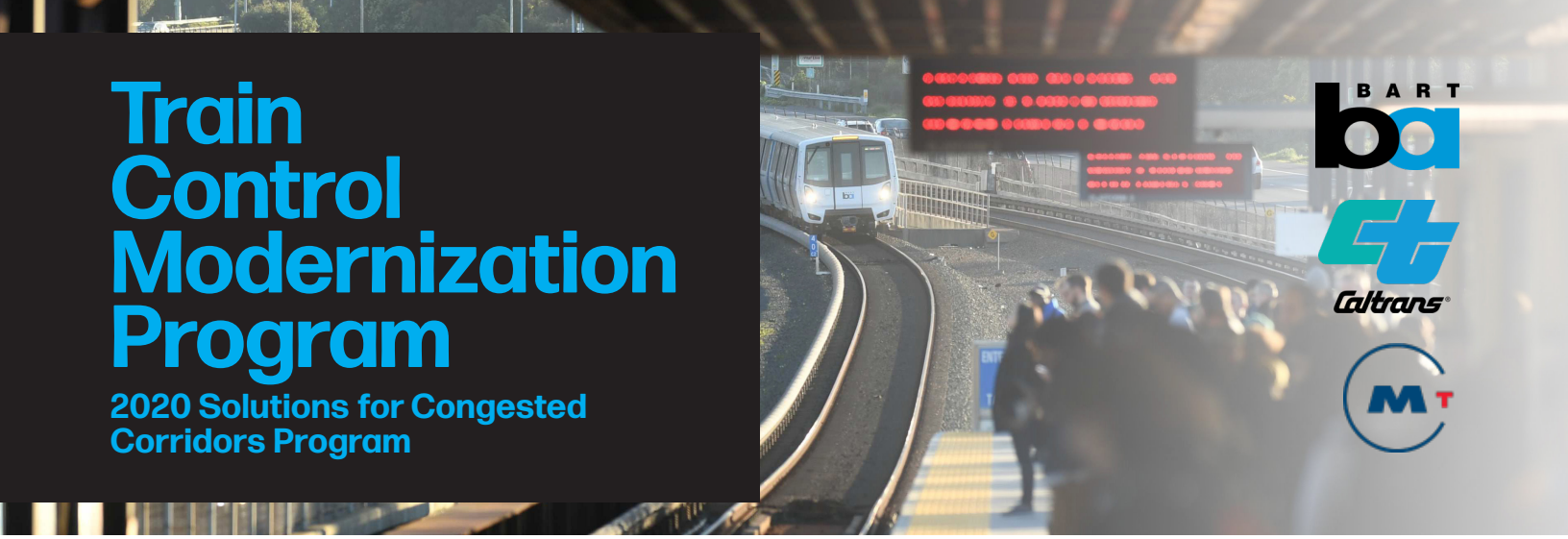
6/29/2020
Date

ROBERT POWERS
General Manager
San Francisco Bay Area Rapid Transit District

17 JUNE 2020
Date

Train Control Modernization Program

2020 Solutions for Congested Corridors Program



BART's Train Control Modernization Program (TCMP) will enable BART to increase the number of trains operating through the Bay Area's Transbay Tube. Long-term ridership trends at BART require additional capacity, which has long been recognized across the region. The TCMP will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

BART will replace the existing train control systems with a new train control system, as well as update the train control power cables and interlock cables within existing right-of-way, allowing BART to achieve shorter headways on the trunk line between Daly City and Downtown Oakland.

BART's TCMP will:

Shorten headways

Increase reliability and reduce delays

Replace aging infrastructure

TCMP Benefits

Relieve Crowding: Onboard capacity will increase significantly.

Increase Reliability: System delays attributable to the old train control system will be reduced.

Increase Average Weekday Ridership and Reduce VMT on Bay Area Roadways: Greater capacity and higher reliability will grow ridership.

Reduce GHG Emissions: Reduction in VMT leads to reduction in GHG emissions.

Sustainable Communities: Additional transit capacity will support station area community growth.

TCMP Schedule

Environmental Process complete	September 2017
30% Design complete	December 2017
Begin Construction Phase	2021
Begin increased service through Transbay Tube	2028

TCMP Cost Estimate

The TCMP is estimated to cost approximately $1.14 billion. This Solutions for Congested Corridors Program grant proposal is for the final $60 million needed to fully fund BART's TCMP through the Bay Area's Transbay Tube and the downtown Oakland segment. This funding would leverage more than $1 billion in local, State and Federal funding, including funding from BART's Measure RR passed in 2016, California's Transit and Intercity Rail Capital Program (TIRCP), and a $1.169 billion Federal Transit Administration Capital Investment Grant, of which $397 million is programed for TCMP.

C. GENERAL INFORMATION

C1. Project Overview

California Department of Transportation (Caltrans) is submitting this application to the 2020 Solutions for Congested Corridors Program (SCCP) in cooperation with the Metropolitan Transportation Commission (MTC) and the San Francisco Bay Area Rapid Transit District (BART) for **BART's Train Control Modernization Program (TCMP).**

This grant proposal is for $60 million in 2020 SCCP funds to fully fund BART's Train Control Modernization Program through the Bay Area's Transbay Corridor, the most congested portion of BART's system, connecting Oakland and San Francisco.

The TCMP will replace the existing train control systems with a new communications-based train control (CBTC) system, allowing BART to achieve the shorter headways needed to operate an increased number of regularly scheduled trains per hour on the trunk line between Daly City, downtown San Francisco, and Downtown Oakland. The new CBTC system will be based on a moving-block signaling approach throughout the existing system. The new CBTC system will be installed within or adjacent to the existing BART trackway and wayside facilities. Existing signaling equipment will be overlaid with the most current electronics, software, computer systems, and cabling.

Figure 1. CBTC through Transbay Corridor

The overall TCMP will install new raceway, power, and communication cables, new Switch Power Supply Cabinets (SPSC), conduit, and breakers at various locations throughout the BART system. New zone controllers, interlocking controllers and wayside radio transponder tags will be installed throughout the trackside alignment, train control rooms and central control facilities. Cars and maintenance vehicles will be outfitted with processor-based controllers, transponders, communication equipment and location sensors.

Installation activities will include trenching for new cabling, concrete pads for electronic equipment along the trackway, as well as new racks, communication equipment and cable trays within the wayside train control rooms and central control facilities. These activities will take place within existing BART right-of-way.

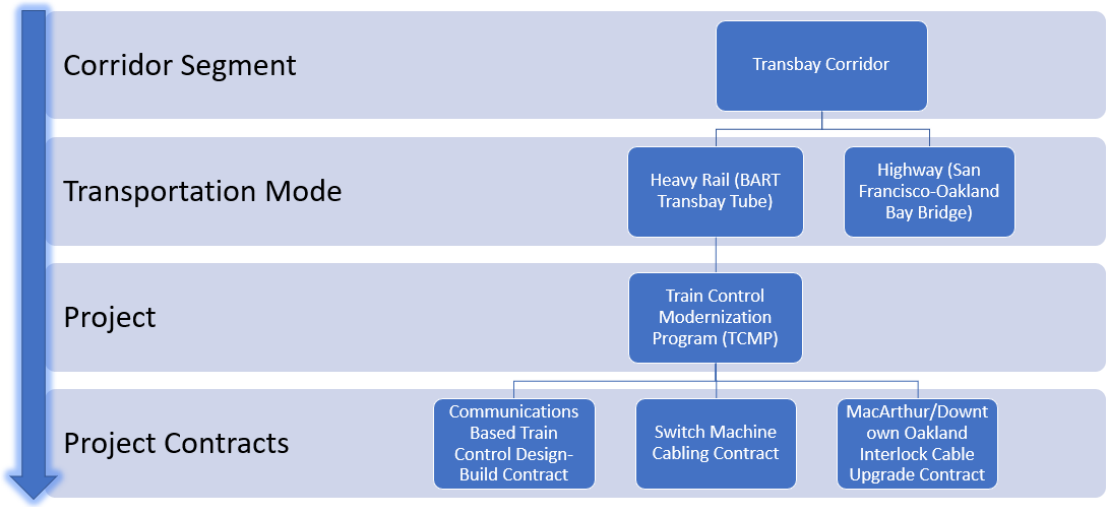
The estimated cost for BART's TCMP is approximately $1.14 billion. Matching funds will be provided by a variety of sources, including BART's Measure RR (a $3.5 billion general obligation measure passed by voters in November 2016), BART's capital allocations (operating funds transferred to support BART's capital program), a Federal Transit Administration Capital Investment Grant, and other state grant funds. The current request of $60 million in SCCP funds will fully fund the TCMP through the Transbay Corridor and enable the benefits presented in this application. The TCMP includes three contracts for implementation through the Transbay Corridor, all with independent utility. These contracts include:

- CBTC Design-Build Contract,
- Switch Machine Cabling Contract,
- MacArthur/Downtown Oakland Interlock Cable Upgrade Contract

Consistency with CTC Guidelines

While the TCMP will be implemented through the BART system, 2020 SCCP funds will be used to fully fund the TCMP through the Transbay Corridor (project segment). Per CTC's guidelines, the Transbay Corridor is considered a project segment because of the size of the overall project. With SCCP funding, the Transbay Corridor segment of the TCMP project will be fully funded. As detailed throughout this application, the segment has independent utility and benefits from implementation will relieve congestion, increase ridership, reduce greenhouse gas emissions, and decrease safety incidents in the corridor and throughout the entire region. BART's TCMP contracting strategy through the Transbay Corridor can be seen in Figure 2 below. The Transbay Corridor segment has independent utility as a segment of the entire BART system because the new train control system will be brought into use after implementation is complete in this segment. This will enable the more frequent train service to commence upon completion of the segment. The Transbay Corridor segment contains the most complicated junctions and the most heavily-used operating environments on the BART system.

Figure 2. BART's TCMP Contracting Strategy through the Transbay Corridor



2020 SCCP funds will be used to fully fund the Switch Machine Cabling and MacArthur/Downtown Oakland Interlock Cable Upgrade Contracts. Both contracts have independent utility for the operation of switches, interlockings, and other track equipment directly after installation and will result in increased reliability benefits as soon as they are implemented. The CBTC Design-Build contract, will be completed after the two cabling contracts and will benefit from the implementation of the earlier contracts but will also have independent utility, and be brought into service upon completion of installation and testing. Additionally, the TCMP contracts that will receive SCCP funding will be ready to start construction by December 31, 2023. BART will install the TCMP on other segments of the BART system following completion of the Transbay Corridor segment, but the improvements in the Transbay Corridor to achieve 28 trains per hour do not depend on those other segments being completed.

A Hybrid Summary Comprehensive Multimodal Corridor Plan (HSCMCP) has been developed and submitted with this application detailing the Transbay Corridor and the TCMP's importance as a priority project in current planning documents. This Hybrid Corridor Plan can be found on the BART TCCCP website.

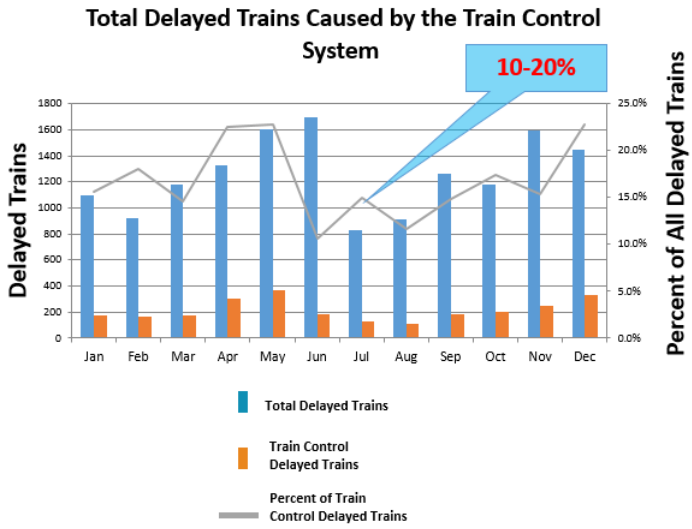
C2. Project Background

BART's Transbay Corridor Core Capacity Program (TCCCP) is a comprehensive program of projects that will increase capacity, relieve congestion and crowding, increase transit ridership, and decrease greenhouse gas (GHG) emissions and vehicle miles traveled (VMT) by increasing the frequency and capacity of trains operating on the Transbay Corridor and the entire BART system. The TCCCP will allow the number of trains operating through the Transbay Corridor to increase from 23 to 28 per hour, and peak hour train lengths to be increased from an average of 8.9 cars to 10, maximizing throughput capacity in the most heavily used and most congested travel corridor in the San Francisco Bay Area. BART's Transbay Corridor TCCCP has four major project components:

1. Train Control Modernization Program (TCMP)
2. New rail cars;
3. Additional vehicle storage at BART's Hayward Maintenance Complex (HMC); and
4. Six new traction power substations.

With this 2020 SCCP application, BART is requesting $60 million to fully fund the TCMP through the Transbay Corridor and Transbay Tube. The TCMP is the linchpin of BART's TCCCP and is key to expanding capacity as well as enhancing system reliability and safety. In 2017, between 10 and 20 percent of all delayed trains were caused by problems with the existing train control system, which is over 45 years old (See Figure 3). BART is proposing to completely replace its aging and obsolete equipment with a communications-based system which will allow trains to run closer together safely, thereby increasing system capacity. This new system is a fully-tested and operational system and is used all over the world including New York, London, Paris, Hong Kong and Denmark.

Figure 3. Total Delayed Trains Caused by the Train Control System, 2017



The four program elements of the TCCCP will allow BART to decrease headways on each of the five BART lines from 15 to 12 minutes, thus increasing frequency by up to 25 percent. Expansion of the rail car fleet will allow for BART to put into operation additional trains of 10 cars, creating additional capacity in the system. Decreased headways and increased capacity result in an estimated increased average weekday ridership of 202,972 BART riders beyond current levels (starting in 2037) and will decrease GHG emissions by at least 3.3 million metric tons of carbon dioxide equivalent ($MTCO_2e$) over a 20-year period.[1]

C3. Purpose and Need Statement

Ranked by population, the Bay Area is the fourth largest metropolitan area in the United States.[2] In 2010, the nine-county region was home to more than 7.6 million people and 3.7 million jobs. Some 300,000 jobs are in San Francisco's central business district alone, the fourth largest central business district in the country.[3] The Bay Area's economy is healthy and growing, driven in part by the technology sector that is vital to growing the nation's overall

[1] Ridership projections are included in Appendix V and GHG projects are included in the benefit-cost analysis.
[2] http://www.vitalsigns.mtc.ca.gov/population
[3] As of 2010, American Community Survey 2006-2010

economy. Downtown San Francisco is undergoing large construction projects that will increase office space and enable the city to add more jobs. By 2040, the region expects 9.5 million residents and 4.7 million jobs to be located here.[4]

This rapid growth is reflected in the increased levels of congestion on Bay Area freeways. In September 2017, the Metropolitan Transportation Commission (MTC) released its yearly analysis of Bay Area freeway congestion. The analysis showed that congestion-related delays during weekday commute periods climbed 9 percent, from 3.2 minutes per commuter in 2015 to a record average of 3.5 minutes in 2016. MTC defines "congested delay" as the time spent in traffic moving at speeds of less than 35mph. The top two most congested freeway segments in the Bay Area both feed into the highly congested Transbay Corridor across the Bay Bridge. Topping the list is afternoon peak period travel northbound and eastbound on US Highway 101 and Interstate 80 from the Interstate 280 interchange in San Francisco to the Bay Bridge's Yerba Buena Island Tunnel. Number two on the list is westbound Interstate 80 from State Route 4 in Hercules to Fremont Street in San Francisco. Congested conditions on this segment span most of the day from 5:25am to 6:55pm.

As the Bay Area's second largest transit network, BART currently operates and maintains 48 stations and 122 miles of revenue track, serving over 440,000 passengers every weekday in the counties of Alameda, Contra Costa, San Francisco, and San Mateo.[5] The Transbay Corridor is the only connection between many East Bay residential areas and jobs in San Francisco. It is the region's most heavily used transportation link, carrying more than 40,000 trips per hour in the peak, two-thirds of which are made on BART's two tracks crossing under the Bay. Virtually all the remaining trips are in cars and buses that utilize the heavily congested San Francisco-Oakland Bay Bridge (Interstate 80).

Figure 4. Average Square Feet per BART passenger on the System

On the main trunk of the BART system, from the Oakland Wye (junction in downtown Oakland where trains of all routes merge) through the Transbay Tube to Daly City, BART currently operates a maximum of 23 trains per hour in each direction. Train lengths vary, but currently average 8.9 cars per train in the peak. Between the East Bay and San Francisco, peak hour trains are crowded, and ridership has been growing. The system is expanding as the San Francisco Core continues to attract development, and with an extension into Santa Clara County that opened on June 13, 2020, tens of thousands of new riders are expected in the coming years.

[4] Plan Bay Area 2040, http://2040.planbayarea.org/sites/default/files/2017-07/Regional%20Forecast%20Supplemental%20%20Report_Final_7-2017_0.pdf

[5] https://www.bart.gov/sites/default/files/docs/Role%20of%20BART%20in%20Region%20-%20Final%20Web%20Oct%202016_1.pdf

BART's existing Transbay Corridor ridership exceeds capacity in the peak between the Embarcadero station in San Francisco and the Downtown Berkeley, Rockridge, and Bay Fair stations in the East Bay. Within this corridor, riders in the peak hour currently have an average of 5.2 square feet of space each, which is an uncomfortable level for passengers (Figure 4). The Transit Capacity and Quality of Service Manual published through the Transit Cooperative Research Program (TCRP) establishes 5.4 square feet of space per passenger as a comfortable loading level on U.S. rail transit systems. [6] The Federal Transit Administration (FTA) has adopted this as the threshold level of crowding for funding Core Capacity projects with Capital Investment Grant funds.

The most crowded part of the BART corridor is the five-mile-long Transbay Tube between the Embarcadero and West Oakland stations, where the average rider has just 4.7 square feet of space during the morning peak, far less than the FTA threshold. Current BART riders endure uncomfortably crowded conditions, while some commuters choose other modes to avoid the crush-load conditions on some BART trains. BART's ability to increase ridership – and the region's ability to steer growth to places served by transit – depend upon additional BART capacity in the Transbay Corridor.

The Train Control Modernization Program will reduce congestion throughout the Transbay Corridor, and more specifically the Transbay Tube, by replacing the existing and outdated train control systems with a new communications-based train control system, associated power cables, and train control raceways. These upgrades to the 45-year old train control system will reduce the headways between BART trains, increase train lengths, and allow the agency to operate more regularly scheduled trains per hour.

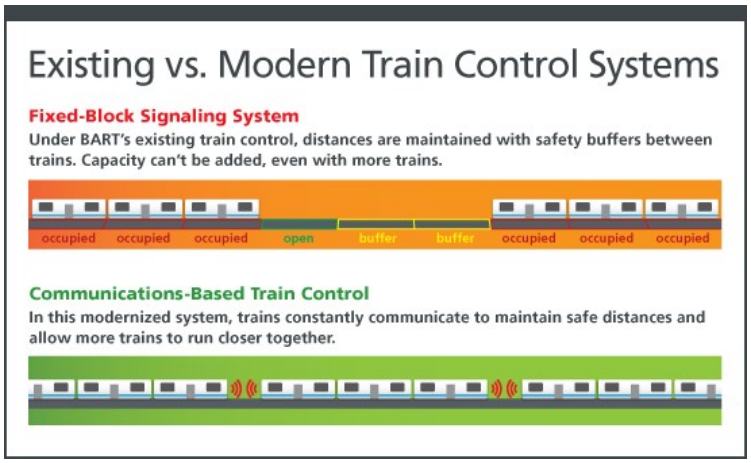
C4. Project Scope

BART will replace the existing train control systems with a new communications-based train control system, allowing BART to achieve the shorter headways needed to operate more regularly scheduled trains per hour on the trunk line, through the Transbay Tube, and between Daly City and the Oakland Wye. The Oakland Wye is the segment of the BART network between the West Oakland Station, the 12th Street/City Center Station and the Lake Merritt Station, where trains coming from the Richmond, Pittsburg/Bay Point, Dublin/Pleasanton and Warm Springs lines converge before traveling in the westbound direction through the Transbay Tube to San Francisco and Daly City.

BART will install new surface mounted train control raceways and associated cables to new Switch Power Supply Cabinets (SPSC) and associated interlock switches in 26 locations. This portion of the TCMP also includes installation of new conduit, power cable, and new breakers between Station House Power to Train Control rooms in 22 locations. The TCMP also includes installation of raceway, power, and communication cables from the MacArthur Train Control Room to wayside Interlock Switches for multiple locations.

[6] TCRP Report 165

Figure 5. Comparison of Existing vs. Modern Train Control Systems



The new CBTC system will be based on a moving-block signaling approach throughout the existing system. The new CBTC system will be installed within or adjacent to the existing BART trackway and wayside facilities. Existing signaling equipment will be overlaid with the most current electronics, software, computer systems, and cabling. New zone controllers, interlocking controllers and wayside radio transponder tags will be installed throughout the trackside alignment, train control rooms and central control facilities. Cars and maintenance vehicles will be outfitted with processor-based controllers, transponders, communication equipment and location sensors.

Installation activities for the CBTC system will include trenching for new cabling, concrete pads for electronic equipment along the trackway, as well as new racks, servers, computers, communication equipment and cable trays within the wayside train control rooms and central control facilities. This replacement of over 45-year-old equipment will further improve reliability of the system. These activities will take place within existing BART right-of-way.

C5. Project Benefits

BART's implementation of the TCMP furthers the following five objectives of the Solutions for Congested Corridor Program as described in the following sections of this application:

- ***Reducing Congestion:*** the proposed improvement will relieve congestion in the Transbay Corridor
- ***Safety:*** address safety issues and concerns in the corridor by reducing VMT, including health impacts from reduced GHG emission
- ***Economic Development:*** supports economic development and access to employment
- ***Air Quality and Greenhouse Gases:*** reduce greenhouse gas emissions and criteria pollutants and advance the State's air quality and climate goals
- ***Efficient Land Use:*** supports transportation-efficient land use principles including policies that support transit-oriented development

For detailed description of these and other benefits, see Section E. Evaluation Criteria and Appendix II. Performance Indicators and Measures.

C6. Project Location

The TCMP will add much needed capacity and congestion relief to the Transbay Corridor, which includes the highly congested Bay Bridge (Interstate 80) which carries car, truck, and transit traffic, as well as the Transbay Tube which carries BART trains. In addition to the Interstate 80 corridor, the BART system also provides a capacity relief alternative to the U.S. Route 101, State Route 24 and Interstate 880 corridors.

See Project Corridor Section and Figure 7 below for a map of the BART system and the Transbay Corridor (outlined by a dotted orange line), as well as more information on project location.

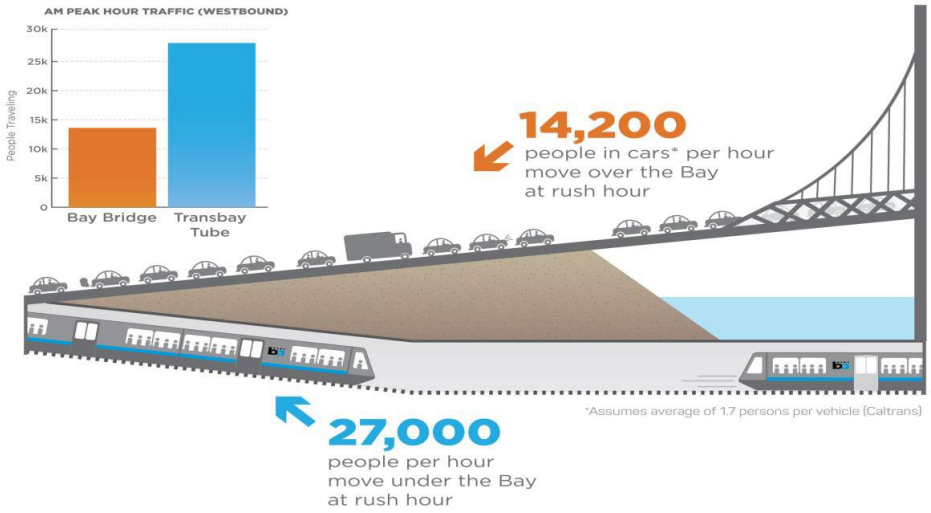
C7. Project Priority

Caltrans priority 2 of 10

C8. Project Corridor

The Transbay Corridor is the only connection between many East Bay residential areas and jobs in San Francisco. It is the region's most heavily used transportation link, carrying more than 40,000 trips per hour in the peak, two-thirds of which are made on BART's two tracks crossing under the Bay. Virtually all the remaining trips are in cars and buses that utilize the heavily congested San Francisco-Oakland Bay Bridge (Interstate 80).

Figure 6. BART's Peak Hour Transbay Market Share

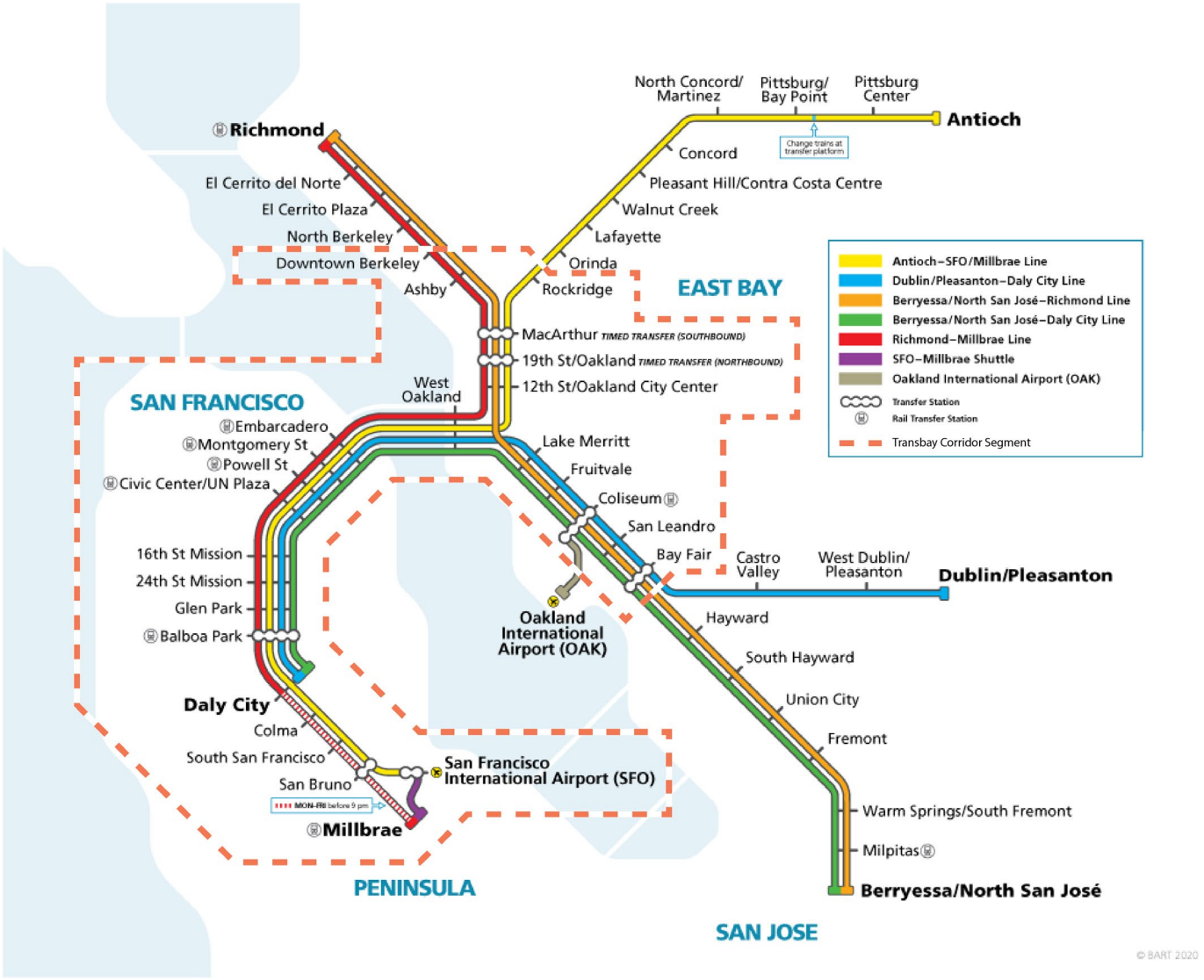


On the main trunk of the BART system, from the Oakland Wye (junction in downtown Oakland where trains of all routes merge) through the Transbay Tube to Daly City, BART currently operates a maximum of 23 trains per hour in each direction. Train lengths vary, but currently average 8.9 cars per train in the peak. Between the East Bay and San Francisco, peak hour trains are crowded, and ridership has been growing. As the system expands – with a recently-completed extension into Santa Clara County and a recent eastern Contra Costa opening – and as the core continues to attract development, tens of thousands of new riders are expected.

This SCCP application includes implementation of the TCMP through the Transbay Corridor (segment). Figure 7 shows a map of the current BART system with the Transbay Corridor segment outline by a dotted orange line. This segment has independent utility in that once TCMP is implemented through this segment, BART will be able to achieve the benefits of increasing from a maximum of 23 trains per hour to 28 trains per hour service through the Transbay Corridor. Beyond this project segment (outside the scope of this grant application), BART will implement TCMP throughout the remaining corridors of the BART system and will then be able to operate up to 30 trains per hour through the Transbay Tube.

As noted previously, a Hybrid Summary Comprehensive Multimodal Corridor Plan was developed per CTC guidelines for this SCCP application.

Figure 7: BART System Map, Transbay Corridor Segment Outlined



C9. Project Consideration for Reversible Lanes

Section is not applicable.

C10. Project Consistency with Regional Transportation Plan & Sustainable Communities Strategy

The Metropolitan Transportation Commission (MTC) adopted an update to its Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Plan Bay Area 2040, on July 26, 2017. The update includes the capital projects and service assumptions that make up the Transbay Corridor Core Capacity Program. Hence, the TCCCP and the TCMP are consistent with the Bay Area's RTP/SCS (Plan Bay Area 2040).

C11. Anticipated Impact of the Safer Affordable Fuel-Efficient Vehicles (SAFE) Rule on Project

Caltrans anticipates no impact on the TCMP project from the Safer Affordance Fuel-Efficient Vehicles Rule.

D. SCREENING CRITERIA

D1. Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS)

As stated previously, The Metropolitan Transportation Commission (MTC) MTC adopted an update to its Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Plan Bay Area 2040, on July 26, 2017. The update includes the capital projects and service assumptions that make up the Transbay Corridor Core Capacity Program. Hence, the TCCCP is consistent with the Bay Area's Sustainable Communities Strategy RTP/SCS.

Figure 8: Plan Bay Area 2040 Goals

Goal		Target*	
	Climate Protection	1	Reduce per-capita CO_2 emissions
	Adequate Housing	2	House the region's population
	Healthy and Safe Communities	3	Reduce adverse health impacts
	Open Space and Agricultural Preservation	4	Direct development within urban footprint
	Equitable Access	5	Decrease share of lower-income households' budgets spent on housing and transportation
		6	Increase share of affordable housing
		7	Do not increase share of households at risk of displacement
	Economic Vitality	8	Increase share of jobs accessible in congested conditions
		9	Increase jobs in middle-wage industries
		10	Reduce per-capita delay on freight network
	Transportation System Effectiveness	11	Increase non-auto mode share
		12	Reduce vehicle operating and maintenance costs due to pavement conditions
		13	Reduce per-rider transit delay due to aged infrastructure

* Complete target language as adopted by the Commission and ABAG Executive Board can be found at: http://planbayarea.org/the-plan/plan-details/goals-and-targets. Target language shown above is summarized for brevity.

Environment Equity Economy

The TCCCP and the TCMP meet the goals of Plan Bay Area in specific and measurable ways, including:

- Reduction of CO2 emissions (Climate Protection)
- Reduce adverse health impacts (Healthy and Safe Communities)
- Increase share of jobs accessible in congested conditions (Economic Vitality)
- Increase non-auto mode share (Transportation System Effectiveness)
- Reduce vehicle O&M costs due to pavement conditions (Transportation System Effectiveness)

Beyond these connections to the TCCCP and TCMP, BART is also committed to the following goals through their Transit Oriented Development guidelines, as discussed more in this application:

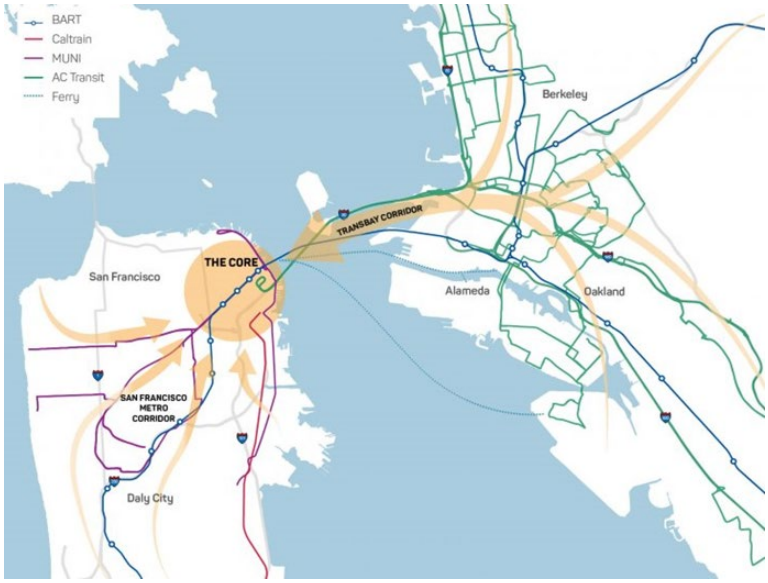
- House the region's population (Adequate Housing)
- Direct development within urban footprint (Open Space and Agricultural Preservation)
- Increase share of affordable housing (Equitable Access)

D2. Corridor Plan

The California Transportation Commission's (CTC's) 2018 Comprehensive Multimodal Corridor Plan guidelines, in recognition of the length of time needed to complete a comprehensive multimodal plan, have allowed agencies to conduct an integrated analysis of existing plans within a corridor, also known as a "Hybrid Plan" to define the corridor. Streets and Highways Code 2391 requires that Solutions for Congested Corridors Program (SCCP) funding "be

available for projects that make specific performance improvements and are part of a comprehensive corridor plan designed to reduce congestion in highly traveled corridors by providing more transportation choices for residents, commuters, and visitors to the area of the corridor while preserving the character of the local community and creating opportunities for neighborhood enhancement projects."

Figure 9. MTC's Bay Area Core Capacity Transit Study Area



BART, as a part of the agency's SCCP funding application for the TCMP, has created a Hybrid Plan, bringing together the Bay Area Core Capacity Transit Study and the Horizon Crossings Perspective Paper. In both plans, the TCMP is described as a priority program, one that is necessary to increase the capacity of BART trains in order to meet the growing demand within the Transbay Corridor. The plan begins with an overview of the Transbay Corridor's capacity needs as well as current and future demand. The TCMP, the lynchpin of BART's Transbay Corridor Core Capacity Program, has been identified by BART as a method to increase capacity through the Transbay Corridor and the BART system. Both the Bay Area Core Capacity Transit Study (BACCTS), which focuses on short- and medium-term investments, and Crossings paper, which focuses on long-term investments and needs, highlight the necessity of the TCMP as a cost-effective investment to increase transit capacity through the Transbay Corridor.

The Hybrid Plan summarizes the guiding principles, multimodal considerations and impacts, community and stakeholder engagement, and consistency with other planning activities at each level of government for both component plans. For the short- and medium-term, the focus of the BACCTS is on increasing transit capacity and reliability by implementing the TCMP and adding new rail cars to the BART system, while also expanding bus and ferry routes. In the long-term, the focus is on increasing transit capacity and ridership through a new BART Transbay crossing. Both studies anticipate large impacts on demand, and the ability to meet future demand if the right capacity investments are taken. Finally, the outcomes and recommended investments of both studies is discussed.

This Transbay Corridor Hybrid Summary Comprehensive Multimodal Plan is located on BART's TCCCP website.

D3. Environmental and Community Impacts

BART, as a recipient of federal funds, is required by the Federal Transit Authority (FTA) to comply with Title VI of the Civil Rights Act of 1964 and its amendments (Act). Title VI of the Civil Rights Act of 1964 requires that no person in the United States, on the grounds of race, color or national original be excluded from, be denied the benefits of, or be subjected to discrimination, under any program or activity receiving federal financial assistance. Presidential Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" addresses environmental justice in minority and low-income populations. Presidential Executive Order 13166 "Improving Access to Services for Persons with Limited English Proficiency" addresses services to those individuals with Limited English Proficiency (LEP).

FTA Circular 4702.1B, dated October 1, 2012, entitled *Title VI Requirements and Guidelines for Federal Transit Administration Recipients* (Title VI Circular) and FTA Circular 4703.1, dated August 15, 2012, entitled *Environmental Justice Policy Guidance for Federal Transit Administration Recipients* (EJ Circular), require that federal funding recipients, such as BART, review its transportation decisions to ensure equity in the transportation decision making process and to ensure that decisions are not made on the basis of race, color, national origin or socioeconomic status.

The existing BART system covers large portions of the Bay Area and bisects several communities, including designated minority and low-income populations. The TCMP equipment in operation will not make any noise, and it will be largely invisible to the public. The TCMP equipment will be entirely in existing transportation right-of-way and existing structures. No impacts from installation or operation of TCMP equipment are anticipated. Therefore, no disproportionately high and adverse effects are anticipated for any surrounding communities, including Title VI/EJ communities.

Per page 11 of the final categorical exclusion for the entire TCCCP, the TCMP has no physical features which will lead to environmental impacts.

The TCMP has categorical exclusion (CE) for NEPA and statutory exemption (SE) for CEQA. These documents are available on BART's TCCCP website.

E. EVALUATION CRITERIA

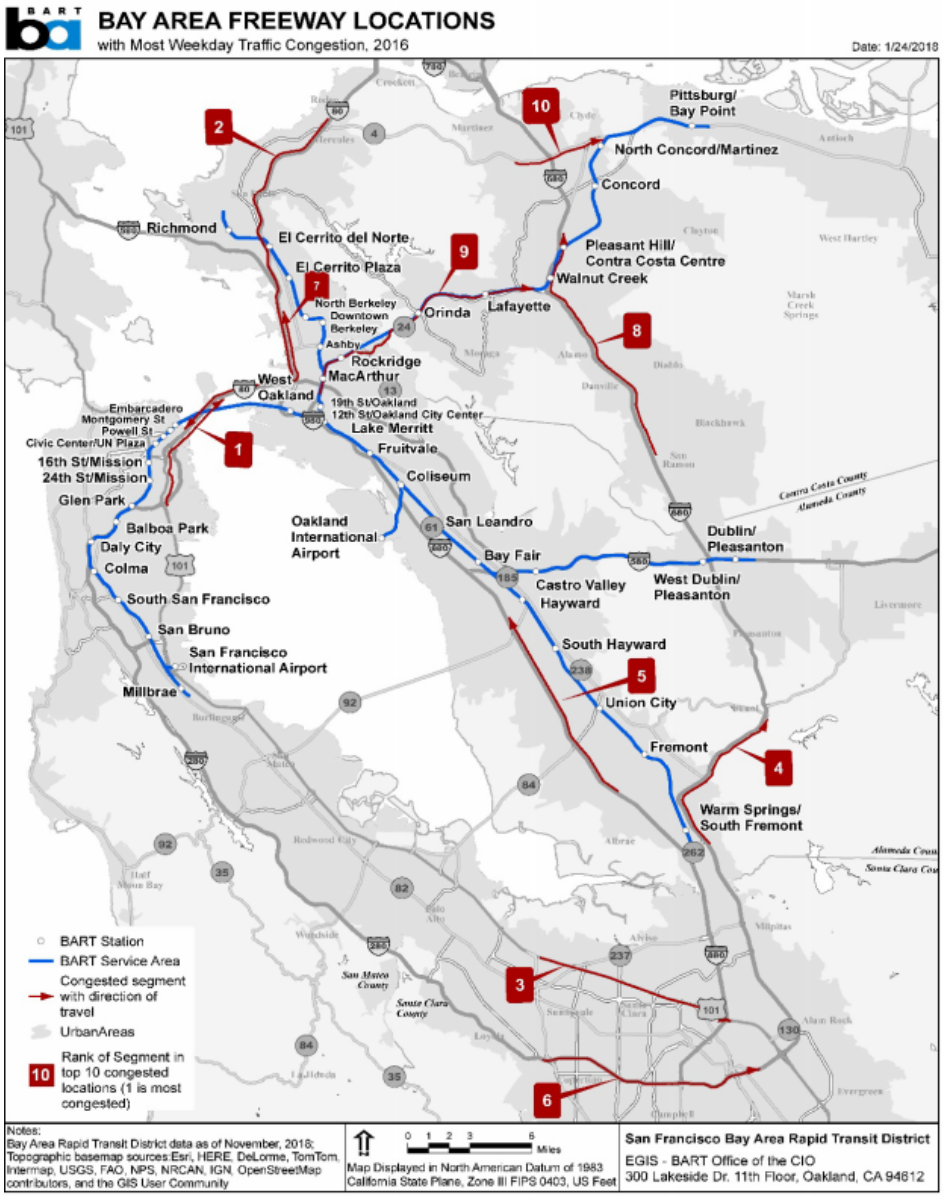
E1. Primary Evaluation Criteria: Congestion

The TCCCP will address the issue of congestion in the highly traveled, highly congested Transbay Corridor, and multiple state highway corridors that feed into the Transbay Corridor. The program meets the Solutions Congested Corridors Program objectives of reducing delay in the corridor, increasing person throughput, expanding mode choices, improving reliability, and reducing vehicle miles traveled by offering expanded transit capacity as an alternative to congested roadways.

Current Corridor Congestion

The Transbay Corridor is the most congested freeway corridor in the Bay Area. The Metropolitan Transportation Commission (MTC) defines "congested delay" as the time spent in traffic moving at speeds of less than 35mph. According to this metric, the freeway segment with the most delay in the entire Bay Area is afternoon peak period traffic on northbound and eastbound U.S. 101 and Interstate 80 (I-80), leaving San Francisco across the Bay Bridge. The freeway segment with the second highest amount of delay is travel along westbound I-80 across the Bay Bridge into San Francisco. Congested conditions along this segment span from 5:25am to 6:55pm. It is the only segment among the region's 10 most congested corridors to include a morning commute and is also the only segment to not have a mid-day break in congested conditions.

Figure 10. Bay Area Freeway Locations with Most Traffic Congestion, 2016



BART Congestion

BART's Transbay Corridor ridership exceeds capacity in the peak between the Embarcadero station in San Francisco and the Downtown Berkeley, Rockridge, and Bay Fair stations in the East Bay. Within this corridor, riders in the peak hour have an average of 5.2 square feet of space each, which is an uncomfortable level for passengers. The Transit Capacity and Quality of Service Manual published through the TCRP establishes 5.4 square feet of space per passenger as a comfortable loading level on U.S. rail transit systems. [7] The Federal Transit Administration (FTA) has adopted this as the threshold level of crowding for funding Core Capacity projects with Capital Investment Grant funds.

The most crowded part of the BART corridor is the five-mile-long Transbay Tube between the Embarcadero and West Oakland stations, where the average rider has just 4.7 square feet of space, far less than the FTA threshold. Current BART riders endure uncomfortably crowded conditions, while some commuters choose other modes to avoid the

[7] TCRP Report 165

crush-load conditions on some BART trains. BART's ability to increase ridership – and the region's ability to steer growth to places served by transit – depend upon additional BART capacity in the Transbay Corridor.

The Transbay Corridor is also the most congested segment of the BART system (see Figure 4). Train crowding conditions during peak periods on this corridor are extreme. Errors in BART's aging train control system are a major cause of train delay. BART's existing train control system was not built to handle BART's current ridership demands. The current system can safely accommodate no more than one train every 2.5 minutes. The new train control system would allow trains to safely run closer together, which will decrease delays and is needed in order to run more frequent service between Oakland and San Francisco. Overall, the TCMP will reduce the risk of severe or recurrent delays for the system's growing number of riders.

Impacts of Existing Condition

According to BART operations data, there were 647 delay events in 2017 that were caused by issues with the train control – accounting for a total of 41,050 minutes (684 hours) of delay. Considering the average train load for each one of these delayed trains, the person minutes of delay in 2017 related to train control issues was nearly 8.7 million minutes, or 144,700 total person hours of delay. The TCMP will drastically reduce the amount of delays related to train control, thus saving thousands of hours of person delay per year, benefiting riders and the overall economy of the region.

Table 1. BART Delay Events, 2017

Month	Events	Minutes of Delay	Average Train Load (riders)	Person Minutes of Delay
January 2017	51	2,949	200	592,296
February 2017	48	5,261	218	1,149,969
March 2017	51	2,383	215	512,796
April 2017	57	2,717	211	573,660
May 2017	56	2,340	214	502,038
June 2017	63	2,190	214	470,456
July 2017	48	2,027	211	427,946
August 2017	48	6,197	214	1,330,199
September 2017	68	3,571	217	776,219
October 2017	67	3,050	216	660,999
November 2017	36	3,147	209	660,725
December 2017	54	5,218	196	1,023,292
2017 Total	647 Events	41,050 Total Minutes of Delay		8,680,600 Person Minutes of Delay

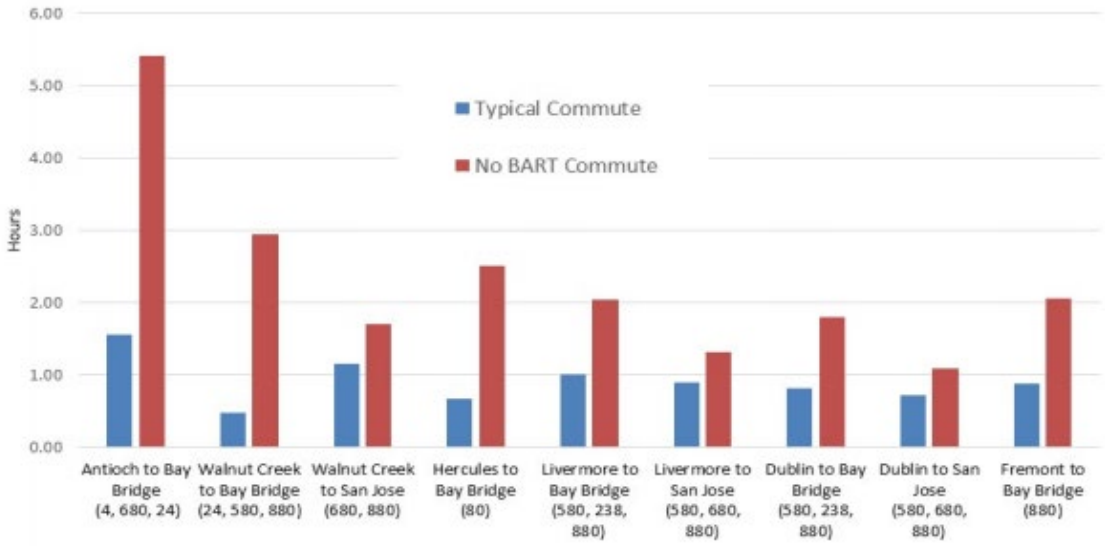
No-Build Environment

Freeway Corridor Impacts

As seen in Figure 10, the BART system parallels many freeway corridors throughout the Bay Area including I-80, U.S. 101, I-580, I-680, I-880, and SR-24. Without BART, freeway congestion would be even worse. An analysis was conducted to evaluate the impact of BART on freeway travel time and congestion using the MTC travel demand model. Figure 11 shows the results of this analysis. The chart shows typical commute times for various travel corridors throughout the Bay Area under conditions both with and without BART. Without BART, travel times per segment would increase between 25 and 500 percent and between 20 minutes to three and a half hours. This analysis

demonstrates that BART is a vital component to the Bay Area transportation network and is critical to addressing issues of delay and congestion throughout the region.

Figure 11. Travel Time Changes, Current and without BART



Source: Cambridge Systematics, 2016. Estimates developed using the MTC travel demand model 2010 base year with and without BART and adjusted to match 2016 conditions. Assumes all BART riders would drive on parallel freeways if BART were not available. Assumes 50% of Bay Bridge users would use other bridges or stay home.

On the BART System, without increased capacity from the TCMP and overall TCCCP implementation, ridership will stay constant, not allowing for needed growth on the system.

Other Corridor Improvements

Replacement of the eastern span of the San Francisco-Oakland Bay Bridge (SFOBB) was completed in 2013, which included replacing the seismically unsound portion of the Bay Bridge with a new self-anchored suspension bridge and viaducts. Additionally, BART is currently completing the Transbay Tube Internal Retrofit Project, which involves installation of a steel liner inside the tube and the installation of a new water pump system.

Other highway-focused improvements planned for the SFOBB corridor include Bay Bridge Forward, which will increase person throughout through completing HOV improvements, transit core improvements, and shared mobility services by investing $40 million in One Bay Area Grant (OBAG) 2 funds to address these capacity constraints.

BART is currently in the early planning stages for building a Second Crossing within the Transbay Corridor. However, this project is not expected to begin construction for years. The Transbay Corridor needs additional capacity in the short term, capacity that the TCMP implementation will provide.

Impact of Not Completing Corridor

As described in the sections above, the following impacts will be seen if the TCMP is not implemented in the Transbay Tube:

- BART ridership in the Transbay Tube will stagnate, as additional system capacity will not be realized from increased frequencies and train lengths.
- Significant delays due to the current train control system will continue, making it harder for riders to rely on the BART system.

- Current drivers on the San Francisco – Oakland Bay Bridge may not be attracted to choose BART for some Transbay trips.
- Current BART riders through the Transbay Tube may choose to drive the San Francisco – Oakland Bay Bridge due to crowded conditions on BART, adding to the congestion already seen at peak periods.
- Economic growth in the corridor may not meet projections due to capacity limitations on BART.

Other Corridor Issues

The Transbay Corridor's major issue is congestion, both on the San Francisco – Oakland Bay Bridge and through the BART Transbay Tube. Congestion further exacerbates other existing issues in the corridor such as safety, air quality, and quality of life. From 2014 to 2019 (past 5 years), nearly 3,000 traffic crashes resulting in fatalities, injuries, or property damage were reported on the Bay Bridge alone. Every year, hundreds of lives are tragically lost on our region's highways, arterials and local streets. Compared to these roadway conditions, BART is a drastically safer travel option. In 2016, BART experienced only 4.5 station incidents per million patrons and 0.9 vehicle incidents per million patrons.[8] With almost 270,000 vehicles traveling on the Bay Bridge every day, the Transbay Corridor significantly adds to the pollution and greenhouse gas emissions of the Bay Area, affecting the health and well-being of many at risk groups. Other than the health issues, congestion in the Transbay Corridor reduces the quality of life for residents in the area by significantly increasing the time spent traveling to employment and recreational centers throughout the region.

Proposed Solution

As discussed previously, the Transbay Corridor Core Capacity Program includes four elements:

- The Train Control Modernization Program (TCMP), which will allow trains to be spaced more closely together, reducing headways. (2020 SCCP Scope and lynchpin of the TCCCP)
- Acquisition of new rail cars, allowing for increased capacity per train.
- Construction of a new railcar storage yard at Hayward Maintenance Complex Phase 2, which will create storage yard capacity for 250 rail cars.
- Six new traction power substations, supplementing BART's existing traction power in those places where there is not enough power to operate the additional capacity.

The TCCCP will relieve current levels of crowding during the peak while creating the opportunity for ridership growth. The TCMP will increase headways and allow trains running through the Transbay Corridor to be 10 car trains. Based on current ridership, the space per passenger in the corridor will be increased from the current average of 5.2 square feet to a more comfortable 7.6 square feet. This additional space will allow for ridership growth on the BART system, as well as reduce congestion on the San Francisco – Oakland Bay Bridge.

Incorporation of Multiple Modes

The transit mode share on the Transbay Corridor is the highest in the Bay Area, particularly during peak periods. Seventy-five percent of morning peak hour trips in the corridor are on transit, which includes BART, AC Transit buses, and WETA ferries. BART carries most of these trips. Two-thirds of all peak hour trips in the corridor are on BART (see Figure 6). The TCCCP will further increase BART capacity, shifting an even larger share of peak period travel to transit.

BART provides the backbone transit system throughout the Bay Area. Every BART station provides local bus connections, with some BART stations providing major intermodal transit connections to a substantial number of

[8] BART Fiscal Year 2017 Short Range Transit Plan and Capital Improvement Program

other transit services such as Caltrain, MUNI light rail and bus, AC Transit, SamTrans, Golden Gate Transit, ACE commuter rail, WETA ferries, and bus services to and from Solano and Napa counties.

Because the Core Capacity Program is expected to increase ridership throughout the system, it will have a positive impact on the ridership numbers of connecting transit services. As part of the ridership modeling included in this application, combined ridership on multiple Bay Area transit systems will increase by 65,800 riders annually because of the Core Capacity Program.

The ridership changes from other Bay Area transit systems, because of the Core Capacity Program, were projected based on the Metropolitan Transportation Commission's (MTC's) Travel Model One forecast. Travel Model One is an Activity Based Model (ABM) covering the nine-county San Francisco Bay Area, which is used to simulate travelers' reactions to transportation projects and policies in the region, as well as to quantify the impact of cumulative individual decisions on the Bay Area's transportation networks.

For a detailed methodology and results of this Ridership Analysis, see Appendix V.

Minimize VMT, Maximize Throughput

The TCMP is expected to increase ridership on the BART system by increasing service frequency and allowing increased train lengths (with additional cars) throughout the BART system and specifically the Transbay Corridor**.** The ridership methodology described in Appendix V details how the following increases in ridership were developed, as well as constraints on ridership increases. Because the full Core Capacity Program is estimated to be completed in 2030 (rather than 2028 for the Transbay Corridor TCMP segment) the ridership benefits described below will begin to accrue even earlier than the ridership modeling estimates, meaning the ridership benefits described in this application are considered conservative.

To predict ridership growth, the June 2016 level of 435,973 riders per day was established as the constrained baseline.

Table 2. Capacity Constrained Weekday Ridership Increase

Program Milestone	Date	Weekday Capacity Constrained Ridership	BART Ridership Growth from Program
Base Ridership – At Capacity	2016	435,973	
Core Capacity Complete	2030		
Year 1 of Core Capacity Implemented	2031	587,145	151,172
Year Final of Core Capacity Implemented (20 years per Cal B/C)	2050	638,945	202,972

Completion of the Core Capacity Program will allow BART to increase the peak hour capacity through Transbay Corridor by 45 percent during the peak period. Assuming current ridership trends continue, the capacity constrained ridership after the completion of the Core Capacity Program will be about 45 percent higher than the current capacity constrained ridership. This leads to an average weekday systemwide capacity constrained ridership of 638,945 with the Core Capacity Program. This is an increase of 202,972 average weekday riders due to increased capacity alone. Under the most likely ridership increase scenario, which is based on increased frequency, shown in Appendix V. Ridership Modeling and Methodology, this 638,945-capacity limit is expected to be reached in 2037.

Based on this ridership increase on the BART system, the Cal B/C model used to estimate benefits for this SCCP application shows that these ridership increases will reduce regional VMT by an average of 535 million miles per year. **Over the 20-year life of the project, this equates to over 10 billion vehicle miles reduced as result of the Core Capacity Program.**

Balanced Solution

As discussed in future sections of this SCCP application, implementation of the TCMP will balance multiple benefits, including:

- Increased capacity through the Transbay Corridor, allowing for increased BART ridership
- Reduced VMT on Bay Area Highways from increased BART ridership
- Decreased GHG emissions stemming from decreased VMT
- More reliable connections to economic centers, like downtown San Francisco and downtown Oakland, that spurs community development along BART corridor, focused on transit-oriented development (TOD)

Benefits of Solution

As discussed previously, the TCMP will provide several benefits for the Transbay Corridor including reducing congestion on the BART line, reducing VMT on Bay Area Highways by providing a reliable alternative mode of transportation with BART, decreasing GHG emissions from reduced VMT, increased reliability, and economic and community development that arises from more reliable and less congested transportation. Additionally, because the TCMP is a train control project, it will have very little impact on the existing lived environment, providing an excellent, low-impact, short-term solution to easing congestion in the Transbay Corridor.

Other Considerations

As discussed above, MTC and other agencies including BART are evaluating the potential for another Transbay Crossing, including a second Transbay Tube. However, this solution is decades in the making, with time horizons extending as far as 2080. Consequently, there are limited options available to Caltrans and BART to increase capacity in the multi-modal Transbay Corridor. The TCCCP, and specifically the TCMP, was studied and determined to be the only short-term solution to increasing capacity.

E2. Secondary Evaluation Criteria

The TCMP will provide safety, accessibility, economic, air quality, and land use in the project corridor and throughout the bay area region.

Safety

BART's existing train control system, originally built over 45 years ago, is reaching the end of its useful life. The new train control system implemented through the TCMP will be a proven technology, ensuring that BART can operate more trains closer together, while maintaining the highest level of safety in train operation. Many systems worldwide have now converted to CBTC, such as the London Underground, the Paris Metro, portions of the New York City subway, and others, and BART will be following this path using fully tested and certified technology.

From 2014 to 2019 (past 5 years), nearly 3,000 traffic crashes resulting in fatalities, injuries, or property damage were reported on the Bay Bridge alone. Fortunately, less than 1% (8) of these crashes resulted in fatalities. However, every year, hundreds of lives are tragically lost on our region's highways, arterials and local streets. Compared to these roadway conditions, BART is a drastically safer travel option. In 2016, BART experienced only 4.5 station incidents per

million patrons and 0.9 vehicle incidents per million patrons.[9] Station incidents and vehicle incidents are all incidents that meet the FTA criteria as "reportable" (mostly injuries and illnesses) and occur either in BART station areas or on BART train cars.

Table 3. Accidents Reported on Bay Bridge, 2014 – 2019

Accident Types	Crashes
Fatal Crashes	8
Injury Crashes	1,049
Property Damage Only Crashes	1,927
TOTAL	2,984

For a list of BART Fatalities/Collisions from 2013 to 2019, please see Appendix VIII of this application.

Increased Safety

It is estimated that the implementation of TCMP through the Transbay Corridor will lead to over 10 billion VMT reduced over 20 years. This reduction in VMT will also reduce the amount of vehicle crashes, as fewer miles will be traveled on Bay Area roadways. Table 4 shows the immense safety and economic effects that the Transbay Corridor Core Capacity Program will have on the surrounding roadways over 20 years.

Table 4. Vehicle Crash Reduction, 20-year analysis

Accident Types	Avoided Crashes
Fatal Crashes	64.3
Injury Crashes	3,105.5
Property Damage Only Crashes	5,889.8
TOTAL	9,060

The benefit cost-analysis completed as part of this application shows that this reduction in safety incidents will yield an itemized benefit of $550 million over the 20-year analysis.

Other Safety Measures

Implementation of the overall TCCCP will also improve safety on BART platforms. During evening peak periods, the platforms at the Embarcadero and Montgomery stations in downtown San Francisco often become extremely crowded, particularly when there is a service disruption. Extreme crowding on the platforms can lead to unsafe conditions when people are too close to the platform edge. The TCMP will enable more frequent trains, which will help to relieve crowding and improve safety on BART platforms.

Accessibility

The TCMP will increase accessibility to multimodal choices by enhancing the reliability of the BART system. As described previously, the BART system (specifically in the Transbay Tube) suffers from reliability issues because of the current train control system. Implementation of the TCMP will allow riders to better rely on BART to get them to their destinations with more certainty on timing; making work, education, retail, and other trips easier on the BART system.

[9] BART Fiscal Year 2017 Short Range Transit Plan and Capital Improvement Program

Access to Multimodal Choices

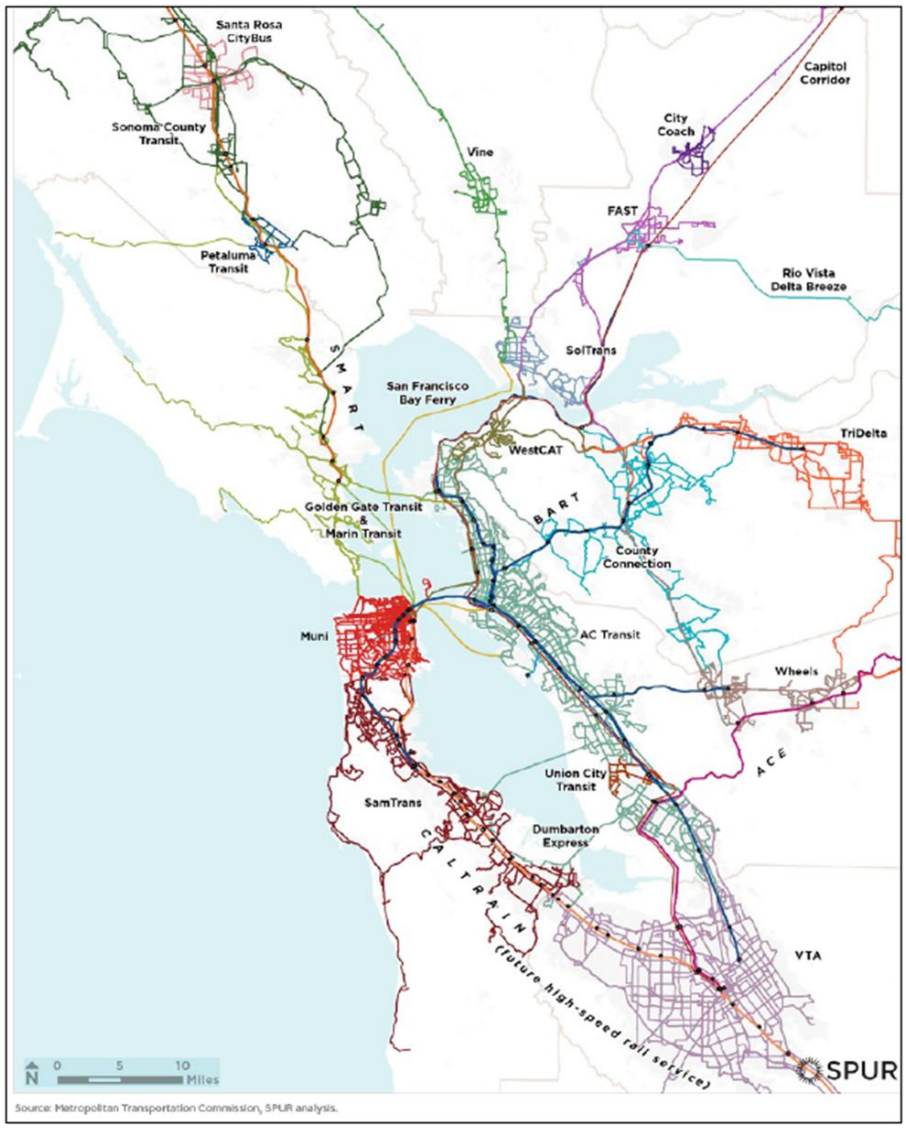
BART provides the backbone transit system throughout the core of the Bay Area. Every BART station provides local bus connections, with some BART stations providing major intermodal transit connections to a substantial number of other transit services such as Caltrain, MUNI light rail and bus, AC Transit, SamTrans, Golden Gate Transit, ACE commuter rail, WETA ferries, and bus services to and from Solano and Napa counties.

Capitol Corridor, which provides rail service from the Sacramento Valley to San Jose, connects with BART at both the Richmond and Coliseum stations, and in 2017, over 160,000 riders transferred between systems at these two stations. The Richmond BART station also provides connections to Amtrak's San Joaquin and California Zephyr services. In addition, BART provides direct service to both the San Francisco and the Oakland International Airports. Over 125 private and publicly funded shuttle services – from medical, university, senior center, employment and high-tech services – provide rides to and from BART stations throughout the system, and many BART riders increasingly rely on the emerging Transportation Network Companies (TNCs) such as Uber and Lyft for "last mile" trips.

BART and 21 other Bay Area transit systems use the regional the Clipper Card fare collection system, facilitating transfers from one system to another. From August 2018 to August 2019, a monthly average of nearly 30 percent of all BART's riders transferred to another Bay Area operator from BART. Looking at Clipper usage data from this time period, BART can identify riders that use their Clipper Card on more than one transit system in a regular month. Of the 21 transit operators that were using Clipper at that time, all services that connect with BART have riders that use Clipper on both systems. For the major transit operators that connect to BART, 29 percent of AC Transit riders, 20 percent of SF MUNI riders, 12 percent of Caltrain riders, and 22 percent of SamTrans riders transferred to BART in a regular month.

Transit agencies that are either currently connected to the BART system or have plans for integration will benefit from growth in BART capacity possible by implementing the TCMP, as BART provides its passengers with connections to destinations throughout the Bay Area.

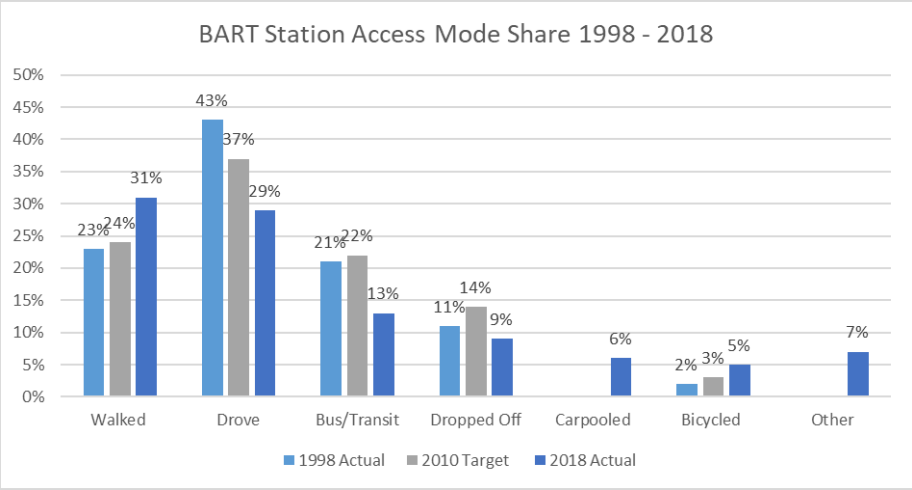
Figure 12. BART Connections in Bay Area



Gap Closure

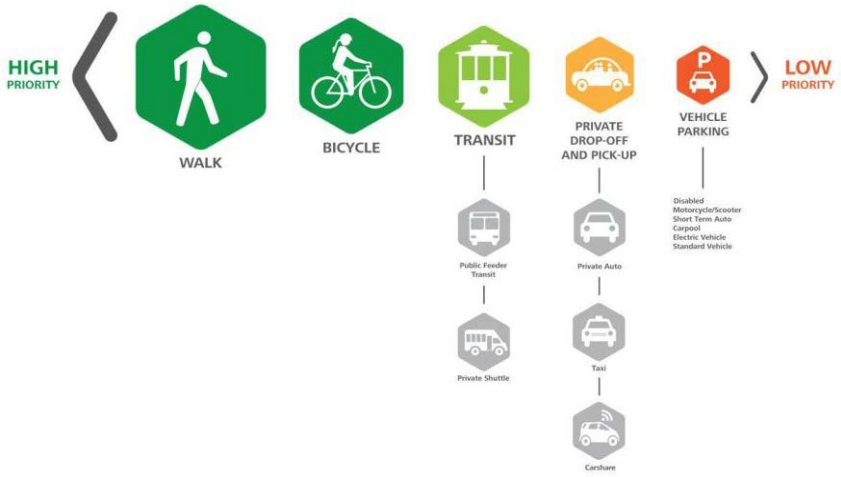
BART proactively supports projects and programs that encourage and support riders to access the BART system by walking and bicycling. BART regularly uses existing revenues and grant funds to improve pedestrian walkways, lighting and signage, and to provide secure bicycle parking at or near its stations. In 2018, over 35 percent of BART riders accessed stations by bicycling and walking (Figure 13). By leading to increased ridership, the TCMP and overall TCCCP will likely result in a proportional increase in bicycling/walking trips to BART stations.

Figure 13. BART Station Access Mode Share[10]



To encourage alternative access modes, BART has revised its Station Access Policy, which prioritizes investments to improve active transportation mode share and safety. With a clear focus on improved access, BART anticipates that the percentage of riders who use active transportation to reach BART will be even greater in the future. Figure 14 depicts BART's station access investment priorities, with walking and bicycling receiving the highest investments of all access types.

Figure 14. BART Station Access Investments Priorities



In addition, the newly designed train cars include bicycle storage areas, making it easier for riders to get to their destinations by bicycle once they have arrived at their stop. This improvement will help facilitate growth in bicycle station access.

Connectivity

As the Bay Area region has recovered from the Great Recession, the technology industry and related sectors have driven rapid and significant growth. Between 2010 and 2014 alone, San Francisco employment grew 25%, surpassing the projections from the last regional transportation plan, Plan Bay Area 2040. About a quarter of all workers in downtown San Francisco and Oakland use BART for their daily commute. As a major connection mode to job centers throughout the Bay Area, investments in BART's capacity capabilities will serve the thousands of workers using the system to access employment, recreational, and housing centers throughout the region. See the Regional Competitiveness section below for information on how the project will continue to support connection to jobs, major destinations, and residential areas throughout the Bay Area.

[10] 2018 data per 2018 BART Customer Satisfaction Study

Economic Development and Job Creation and Retention

Regional Competitiveness

BART supports the Bay Area's growing economy. Hundreds of thousands of commute trips are made on BART every weekday, saving commuters time and money, and connecting businesses with a larger pool of workers. Commuters traveling into San Francisco save on average 30 minutes each direction compared to driving. Commuters traveling to downtown Oakland save 7 minutes on average compared to driving and those traveling to Pleasant Hill save 30 minutes on average.[11] These travel time benefits help support the region's major economic centers by connecting businesses with the workers they need. About a quarter of all workers in downtown San Francisco and Oakland use BART for their daily commute. BART makes 12 percent more workers available within an hour commute of Downtown San Francisco and 28 percent more within an hour commute of the West Dublin/Pleasanton station.[12] Without investments in BART capacity to serve these important travel markets, the Bay Area's economic competitiveness would suffer. Many new jobs would go to regions that enjoy shorter travel times and less crowding.

Because of the value BART provides, the land around BART stations sells and leases at a substantial premium, increasing property tax revenue to local government. At the same time, the money that the region invests in building and maintaining BART is reinvested in the Bay Area economy, further contributing to growth. Over the next 25 years, BART is expected to take on an even larger role in the Bay Area's economy by helping to accommodate the region's growth.

Movement of Goods and Services

According to the San Francisco Bay Area Goods Movement Plan, traffic congestion is a prominent issue to the movement of goods in the Bay Area. Truck delays increase the cost of goods movement, as well as increased truck emissions. As described earlier in the Congestion Section, the TCMP will result in significant VMT reductions (over 10 billion over 20 years) which corresponds to less drivers utilizing the Transbay Corridor, allowing for better movement of trucks over the Bay Bridge.

Job Creation

BART's TCMP will result in direct jobs being created both at BART and for consultant staff. Based on staffing plans for TCMP, from 2021 through 2029, over 500 new positions will be created to build the system, with the jobs being located at BART headquarters, the Pittsburg, CA facility, and other locations internationally. Additionally, based the Caltrans Executive Factbook economic multiplier of 11 jobs per $1 million investment, the over TCMP will result in other 12,540 direct and indirect jobs supported.

Bombardier, the Canadian company under contract to complete the initial 775 cars that are BART's "Fleet of the Future" has opened a new facility in Pittsburg, California to complete this order, as well as future work in California and the west coast. This move by Bombardier, because of the large contract with BART for rail vehicles, will create economic opportunities for the Bay Area region by rehabbing an existing manufacturing facility and then staffing the facility. Bombardier currently has nearly 500 employees in California, working on projects beyond the current BART order of 775 vehicles. Bombardier employees are operating and maintaining the AirTrain system at San Francisco International Airport, maintaining the commuter rail car fleet for the Metrolink service at the Southern California Regional Rail Authority, and operating and maintaining the Coaster and Sprinter rail services for the North County

[11] 2014 BART Customer Satisfaction Study, https://www.bart.gov/sites/default/files/docs/CustSat2014Report_Final.pdf
[12] Economic Impacts of BART Operations, ALH Urban & Regional Economics, September 2015

Transit District. Bombardier is also in the early stages of bringing a new automated people mover system to Los Angeles International Airport.[13] Bombardier's presence in the region will only grow with this additional investment in the assembly plant. It has been reported that about 50 people currently work at the plant and expect that number to rise to about 115 as the plant ramps up. Bombardier's decision to locate this new manufacturing facility in the Bay Area is only possible with BART's large contract.

Air Quality and Greenhouse Gas Reductions

Included in the Cal B/C model conducted as part of this SCCP application, a GHG analysis was conducted in conjunction with the ridership analysis discussed above.

Table 5 summarizes the lifetime GHG reductions, which were quantified assuming a 20-year analysis, per Cal B/C guidance. These substantial GHG reductions are derived from the increased ridership that will be spurred from the increased capacity resulting in implementation of the TCMP. This increased ridership will mean that VMT will be reduced on the region's highways (as discussed previously) leading to fewer cars and less congestion on Bay Area roads.

Table 5. GHG Reduction Cal B/C Model Results

Emission Reductions	Total over 20 Years (tons)	Average Annual (tons)	Value over 20 years ($ million)	Average Annual Value ($ million)
CO Emissions Saved	12,029.34	601.47	$ 0.47	$ 0.02
CO_2 Emissions Saved	3,330,494.57	166,524.73	$ 87.32	$ 4.37
NO_X Emissions Saved	607.02	30.35	$ 5.83	$ 0.29
PM_{10} Emissions Saved	2.65	0.13	$ 0.24	$ 0.01
$PM_{2.5}$ Emissions Saved	16.44	0.82		
SO_X Emissions Saved	32.91	1.65	$ 1.19	$ 0.06
VOC Emissions Saved	496.76	24.84	$ 0.33	$ 0.02
Total	**3,343,679.69**	**167,183.98**	**$ 95.37**	**$ 4.77**

Based on the total GHG reductions over 20 years, the following equivalencies are shown for the TCCCP[14]:

- Over 380 million gallons of gasoline
- Over 3.7 billion pounds of coal
- Nearly 390 thousand homes' energy use for 1 year
- Over 7.8 million barrels of oil

Additionally, GHG reductions from the TCCCP is equivalent to carbon sequestered by:

- Over 55.8 million seedlings grown for 10 years
- Over 4.4 million acres of US forests in one year

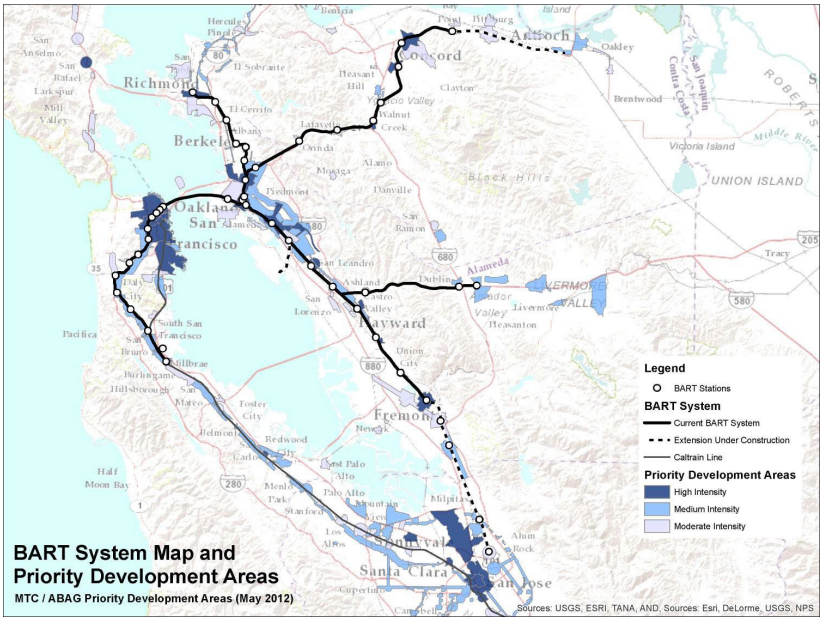
[13] https://www.bombardier.com/en/media/newsList/details.bt-20190614-bombardier-announces-expansion-of-its-u-s--footprint.bombardiercom.html

[14] These equivalencies were calculated based on the EPA Greenhouse gas equivalencies calculator: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Efficient Land Use

A key aspect of Plan Bay Area, which contains the Bay Area's strategy for reducing GHG emissions, is to concentrate new housing and jobs in designated Priority Development Areas (PDAs) that are served by BART and other transit operators (Figure 15). PDAs are areas within existing communities that local city or county governments have identified and approved for future growth. These areas typically are accessible by one or more transit services; and they are often located near established job centers, shopping districts and other services. Plan Bay Area 2040 is both a transportation plan and a housing plan and makes the case that the Bay Area currently has a housing crisis, with a need for a tremendous amount of additional affordable and other housing to support a growing population. Additionally, Plan Bay Area's Sustainable Communities Strategy calls for a 33 percent increase in the share of housing units located in PDAs that are well served by transit, many of which are centered around BART stations.

Figure 15. BART System Map and Priority Development Areas



While BART is not directly responsible for building housing, sustaining high quality transit service is essential to supporting the regional plan for concentrating housing in places best served by transit. BART proactively supports Transit Oriented Development (TOD) on its property and around its stations. As of July 2019, twenty-four TOD projects are currently under construction, planned, or completed on BART-owned property near stations, representing over $3 billion in private investment. These projects will add over 5,600 new housing units within walking distance of BART stations.[15] In general, BART's TOD Policy encourages and supports high quality TOD, including new housing within walking distance of BART stations.

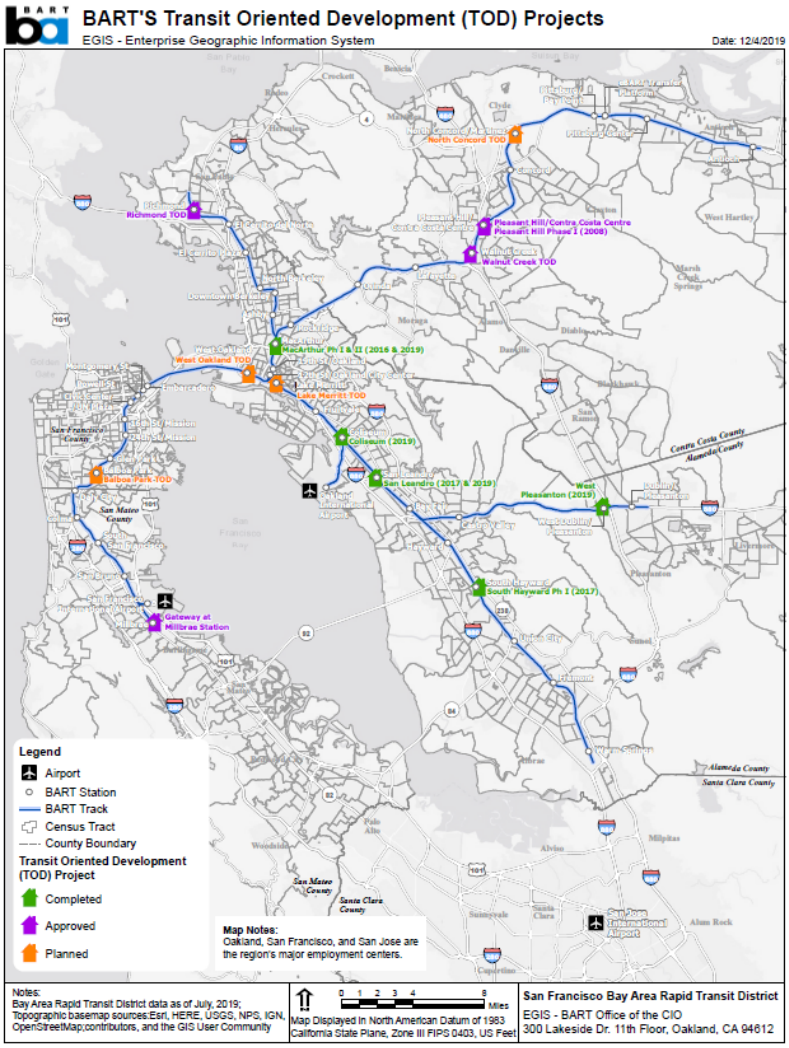
In 2016, the BART Board of Directors adopted an affordable housing policy and performance targets setting a goal of 35 percent affordable housing on its station sites which could result in an additional 7,000 affordable units over the next ten years. In addition, the BART Board also adopted TOD land use strategies, which ensure that TOD opportunities are explicitly accounted for in the acquisition of new properties, the location of new station sites, and the design and construction of station facilities. It is estimated that the TOD Policy will offset GHG emissions by 24 percent versus conventional development. This means that if BART produces 20,000 units on its property versus elsewhere in Alameda and Contra Costa counties, households will drive approximately 24 percent less. Additionally, by supporting TOD in these areas, BART is contributing to the region's Sustainable Communities Strategy goal of reducing per capita GHG emissions in 2035 by 16 percent.

[15] https://www.bart.gov/about/business/tod

BART has played a strong leadership role as a transit agency with an interest in housing, as evidenced by BART's role on the technical and steering committees of CASA – the committee to house the Bay Area – and BART's leadership role in partnership with the Nonprofit Housing Association of Northern California to draft the CASA public lands strategy. In 2018, then-Governor Brown signed AB2923 (Chiu/Grayson), which was authored in response to BART's strong Board-adopted commitments to constructing housing on BART property. This bill establishes a process by which developable BART-owned property in Alameda, Contra Costa, and San Francisco Counties will be rezoned to support transit-oriented development, and establishes development streamlining provisions similar to SB 35. BART is in the process of implementing this historic bill and has engaged the 22 jurisdictions affected by BART's TOD program.

It is assumed that many riders from these TODs on the BART system will drive BART ridership increases, once the TCCCP allows greater capacity during peak hours.

Figure 16. Station Modernization Program: Transit Oriented Development (TOD) Projects



Mixed-Use, Infill, and Multimodal Choices

As mentioned above, Plan Bay Area has placed a focus on concentrating new housing and jobs in Priority Development Areas (PDAs) that are served by BART and other transit operators. PDAs are areas within existing communities, typically accessible by one or more transit services, that local city or county governments have identified and approved for future growth and are eligible for grants that focus on affordable housing, infrastructure development, and transit-oriented development planning. While BART is not directly responsible for building housing, the focus placed on transit-oriented developments and converting under-used parcels of land near transit stations into commercial, residential, and retail centers makes housing an important consideration for the agency.

BART has also adopted an affordable housing policy and performance targets that set a goal of 35 percent affordable housing on its station sites which could result in an additional 7,000 affordable units over the next ten years. In addition, the BART Board of Directors also adopted TOD land use strategies, which ensure that TOD opportunities are explicitly accounted for in the acquisition of new properties, the location of new station sites, and the design and construction of station facilities. The emphasis placed on TOD not only displays BART's commitment to expanding the multimodal choices for residents in underdeveloped areas, but also ensuring that those residents have affordable and accessible housing options. With the implementation of the TCCCP and the TCMP, BART will be able to increase

the capacity and reliability of its existing system to better serve the anticipated increases in demand and ridership resulting from the success of sustainable development practices across the Bay Area.

See above section (Efficient Land Use) and Accessibility Section for more information on how the project supports mixed-use and in-fill development with multimodal choices.

Local Land Use Policies

Pursuant to CA Public Utilities Code 29010 (AB2923 2923, Chiu/Grayson, 2018), by July 1, 2022, local jurisdictions are required to ensure that all developable BART-owned property near stations in Alameda, Contra Costa, and San Francisco Counties will have zoning consistent with BART's 2017 TOD Guidelines. All properties will be zoned for at least 75 units/acre, with allowable heights ranging from at least 5 stories to at least 12 stories, and floor-area ratios of at least 3.0. There will be no residential or office parking minimums, with parking maximums ranging from 0.375 to 1.

The impetus for AB 2923 is BART's own ambitious policies supporting transit-oriented development. BART aims to produce 20,000 housing units, 35 percent of which are affordable, and 4.5 million square feet of office space on its property by 2040. At least 20 percent of units at any given BART development must be affordable. BART has station access and other policies supporting goals to increase the share of BART passengers using active transportation modes to access the stations and has created its own "Safe Routes to BART" funding program under Measure RR to encourage local jurisdictions to enhance local pedestrian and bicycle access.

The law further states that if a project is at least 50 percent residential, with at least 20 percent affordable housing and meeting certain labor standards, a developer of BART property may pursue SB 35 streamlining.

While state law will fully ensure that all of BART's properties are zoned for multi-family or residential mixed-use development, most local jurisdictions have adopted existing specific plans around BART stations to ensure the land use plans nearby are transit supportive, and four are currently in progress (North Concord, Irvington, North Berkeley, Ashby). Many of these existing policies include local density bonus provisions, project-level EIRs that reduce the environmental review process, or by-right development conditions.

E3. Deliverability Criteria

Matching Funds

The cost of implementing the TCMP through the Transbay Corridor is approximately $1.14 billion and is shown in Appendix I (PPR) in more detail. The following section outlines the matching funds.

TCMP implementation through the Transbay Corridor represents a usable geographic segment of the Transbay Corridor Core Capacity Program, separate from the other TCCCP components, and can be fully completed with funding from the 2020 Solutions for Congested Corridor Program.

Table 6. TCMP, Transbay Corridor Segment Cost

Funding Source	Funding Amount ($ millions)
BART Capital Allocation	$52.93
2018 TIRCP Award	$318.60
Measure RR	$312.41

FTA CIG	$397.24
2020 SCCP Request	$60.00
TOTAL	$1,141.18

Confirmation of matching funds are located at the following links:

- 2018 TIRCP Award: TIRCP Project Detail Summaries (page 5)
- FTA CIG: USDOT allocates $300 million to San Francisco Transbay Corridor Core Capacity Project

Deliverability

The TCMP will be implemented through three contracts:

1. CBTC Design-Build Contract,
2. Switch Machine Cabling Contract
3. MacArthur/Downtown Oakland Interlock Cable Upgrade Contract

The procurement process for the CBTC Design-Build Contract is currently underway and construction phase of this contract is anticipated to begin in 2021. The Switch Machine Cabling Contract will begin construction in early 2021 and be complete in February 2023. The MacArthur/Downtown Oakland Interlock Cable Upgrade Contract will begin construction in January 2022 and be complete in July 2024. These two contracts will construct portions of the train control system separate from the design-build contract and will be operational immediately upon implementation.

Table 7 shows the sources and uses of overall TCMP funding broken out by contract. 2020 SCCP funds will be used exclusively for the switch machine cabling and interlock cable upgrade contracts.

Table 7. TCMP Sources and Uses ($ millions)

Funding Source	CBTC Design-Build Contract	Switch Machine Cabling Contract	MacArthur/Downtown Oakland Interlock Cable Upgrade Contract	Total Funding
BART Capital Allocation	$52.93			$ 52.93
2018 TIRCP Award	$ 318.60			$ 318.60
Measure RR	$ 309.23	$ 3.18		$ 312.41
FTA CIG	$ 397.24			$ 397.24
2020 SCCP Request		$ 45.15	$ 14.85	$ 60.00
Total	**$1,078.00**	**$ 48.33**	**$ 14.85**	**$ 1,141.18**
Construction Begin – End Years	2021 - 2028	2021 – 2023	2022 - 2024	TCMP segment implemented in 2028

In September of 2017, BART received confirmation that its TCCCP qualified for a Categorical Exclusion (CE) from NEPA. The September 2017 CE confirmation letter from FTA is found in BART's TCCCP website. Environmental Documentation. The rail vehicle acquisition, traction power improvements and TCMP projects are statutorily exempt from the California Environmental Quality Act, and the BART Board adopted the project and certified the statutory exemption in November 2016. HMC Phase 2 was cleared through CEQA with a Negative Declaration (2011) and two addenda to the Negative Declaration (2013 and 2016). BART's TCMP does not require any third-party involvement to begin implementation.

Collaboration

Caltrans submits this 2020 SCCP application in collaboration with MTC and BART. Caltrans, while the submitter of this application, will not be responsible for project completion or funding shortfalls that may arise. Additionally, MTC, while a co-applicant, will not be responsible for project completion or funding shortfalls that may arise for the TCMP. BART will be the agency responsible for project and funding management, implementation, and execution.

The Metropolitan Transportation Commission (MTC) is the transportation planning, financing and coordinating agency for the nine-county San Francisco Bay Area. The Commission's work is guided by a 21-member policy board. MTC is responsible for producing and updating the Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle and pedestrian facilities. MTC's current RTP, known as Plan Bay Area 2040, was adopted on July 26, 2017 and includes the TCCCP within the fiscally constrained plan. As the designated recipient of federal transit formula funds in the Bay Area, MTC administers funding from several federal programs to the region's transit agencies. In addition, the Commission is a programming agent for several state transit grant programs including State Transit Assistance.

Cost Effectiveness

An economic benefit-cost analysis of the TCMP was conducted using Caltrans' Life-Cycle Benefit-Cost Analysis Model 7.2 (Cal-B/C v.6.2). Because the different components of the TCCCP (with TCMP as the most important component for reliability and capacity improvements) work together to generate the capacity improvements, the BCA evaluates the costs and benefits of the entire TCCCP. The analysis shows that the TCCCP will generate an estimated $3.5 billion in present-value benefits (2016$) over its expected useful life of 20 years, exceeding the expected TCCCP costs (capital and O&M) of $2.17 billion (discounted 2016$). With a benefit-cost ratio (BCR) of 1.6, the total TCCCP is expected to generate economic benefits that outweigh its costs. Table 8 outlines the results of the BCA over the full life of the TCCCP and in its first 20 years of operation. An Excel spreadsheet of the BCA model and supporting documentation are submitted with this SCCP application.

Table 8. Benefit Cost Analysis Results

(3)

INVESTMENT ANALYSIS
SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$2,167.2
Life-Cycle Benefits (mil. $)	$3,553.3
Net Present Value (mil. $)	$1,386.2
Benefit / Cost Ratio:	1.6
Rate of Return on Investment:	8.5%
Payback Period:	7 years

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$850.9	$0.0	$850.9	$42.5
Veh. Op. Cost Savings	$2,055.4	$0.0	$2,055.4	$102.8
Accident Cost Savings	$550.9	$0.0	$550.9	$27.5
Emission Cost Savings	$96.2	$0.0	$96.2	$4.8
TOTAL BENEFITS	$3,553.3	$0.0	$3,553.3	$177.7
Person-Hours of Time Saved			63,543,065	3,177,153

Should benefit-cost results include:

1) Induced Travel? (y/n)	Y	Default = Y
2) Vehicle Operating Costs? (y/n	Y	Default = Y
3) Accident Costs? (y/n)	Y	Default = Y
4) Vehicle Emissions? (y/n) includes value for CO_2e	Y	Default = Y

EMISSIONS REDUCTION	Tons: Total Over 20 Years	Tons: Average Annual	Value (mil. $): Total Over 20 Years	Value (mil. $): Average Annual
CO Emissions Saved	12,029	601	$0.5	$0.0
CO_2 Emissions Saved	3,330,495	166,525	$87.3	$4.4
NO_X Emissions Saved	607	30	$5.8	$0.3
PM_{10} Emissions Saved	3	0	$0.2	$0.0
$PM_{2.5}$ Emissions Saved	16	1		
SO_X Emissions Saved	33	2	$1.2	$0.1
VOC Emissions Saved	497	25	$0.3	$0.0

The increase in ridership and the corresponding decrease in VMT described in previous sections will result in fewer greenhouse gas emissions, fewer automobile crashes, and lower vehicle operating costs, which have been estimated and monetized using the parameters laid out in Cal-B/C v. 7.2. The travel time savings calculation assumes that the change in headway from 15 minutes to 12 minutes will result in the average current rider waiting 90 seconds fewer per trip (half of the decrease in headway). This figure does not account for additional time savings from reduced delays and reduced passenger queuing. Travel time changes for new riders were not included in the analysis.

F. FUNDING AND DELIVERABILITY

F1. Project Cost Estimate

The cost of implementing the TCMP through the Transbay Corridor is approximately $1.14 billion. The cost estimates below are shown in year-of-expenditure (YOE) dollars and have all been approved by the BART General Manager. See Tables 6 and 7 for details on project cost and funding sources.

Funding Sources

BART Funds ($52.93M): In June 2019, the BART Board authorized $200 million of funds, "BART Capital Allocations", to be directed to BART's Transbay Corridor Core Capacity Project. These capital allocations, as well as a prior commitment made by BART to the TCMP and other elements of the TCCCP, are generated from the Productivity-Adjusted Inflation-Based Fare Increase Program which implements fare adjustments every two years between 2014 and 2026 with capital proceeds directly allocated to a separate account to fund these projects.

2018 TIRCP ($318.60M): In 2018, BART was awarded $318.6 million in Transit and Intercity Rail Capital Improvement Program funds for funding. The TCCCP funding plan allocates the entire $318.6 million to TCMP.

Measure RR ($312.41M): Measure RR is a general obligation bond measure which was passed by the voters in the BART District in November 2016. The measure provides $3.5 billion to fund the system's most critical investments for maintaining the system in a state-of-good-repair and crowding relief. $312.41 million in Measure RR funds is programmed for this segment of the project.

FTA CIG ($397.24M): BART's Transbay Corridor Core Capacity Project is in the final stages of securing a $1.169 billion grant from Federal Transit Administration's (FTA) Capital Investment Grant (CIG) program. TCMP is a major component of this scope. In June 2019, the Transbay Corridor Core Capacity Project was admitted to Entry into Engineering phase of the CIG program, with a Full Funding Grant Agreement expected in 2020. The full CIG grant amount is for $1.169 billion, of which $397 million is programmed for TCMP.

Potential Cost Overruns

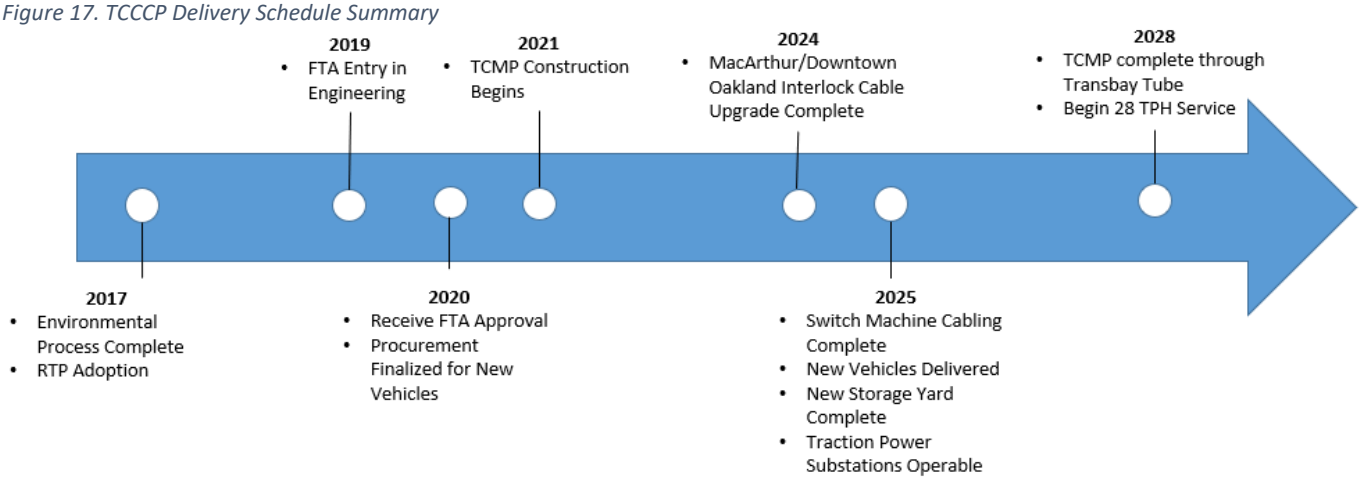
Significant program contingency is available for potential cost overruns to the entire TCCCP. BART has the project management skills, professional expertise and financial means to deliver this project, assuming funding is secured. Any cost overruns would be borne solely by BART, paid for with sources including, but not limited to, BART fare revenues and additional funding through its Measure RR program.

Project Delivery Plan

The overall TCCCP has been sequenced to deliver all four component projects concurrently to minimize the overall Program duration and bring the Program benefits to fruition as quickly as possible. As shown in Figure 17, TCMP

contains the longest schedule duration in the Program. Accordingly, the Program critical path extends through the TCMP implementation schedule.

Figure 17. TCCCP Delivery Schedule Summary



BART has begun the procurement process for the CBTC Design-Build contract and expects to begin the construction phase of this project in 2021. For the TCMP train control power cable and interlock cable upgrades, BART is expecting to give final notice to proceed (NTP) in early 2021 and early 2022 respectively. Due to contract sequencing, these two contracts are proposed to receive state SCCP funds. While each piece delivers independent utility, all three scopes will work together to deliver the full TCMP benefits outlined in this application. The TCMP schedule anticipates that the new train control system will be ready to demonstrate 28 train per hour (TPH) capacity through the Transbay Corridor by 2028.

BART has conducted a thorough analysis of the risks in fully delivering the TCMP projects and has outlined specific mitigation strategies to minimize these risks. The potential risks include unforeseen site conditions, inadequate survey data, Oakland maintenance shop availability, unforeseen HAZMAT, proposer protests, and BART staffing levels. By identifying these issues early in the design process, BART has been prepared to implement the identified strategies including the performance of additional site and conditions surveys, organizational team management to ensure appropriate staffing and organizational readiness, and other tasks. A more complete summary of the potential delivery risks can be provided upon request.

G. COMMUNITY IMPACTS

As stated previously and documented in the CE for the TCCCP, there are no adverse community effects expected from TCMP implementation.

BART riders come from across the income spectrum and from the full diversity of the region's racial and ethnic groups in rough proportion to their representation in the population of the BART district as a whole. Additionally, BART offers an essential travel option for people with disabilities, for youth and seniors, for those living in households without access to a car, and for whom daily driving would be an unaffordable expense. As the spine of the regional transit system, BART helps to make the Bay Area more affordable for lower-income households and is accessible to all. For more information on BART's impacts, please see Role of BART in the Region.

BART has a long and successful history of interacting and working with social justice, environmental, community-based, faith-based, disability rights and other groups in the BART service area. BART has solicited input and sought ideas on a wide variety of both programs and projects – from the design of new rail cars, to station area improvements or development, to changes in fares and their potential impact. BART has successfully implemented several

community-based grants such as Caltrans' Environmental Justice grants, MTC's Community-based Transportation Planning grants, as well as the successful Better BART outreach campaign in 2016.

BART's outreach efforts are designed to ensure meaningful access and participation by minority, low income, and Limited English Proficient (LEP) populations and the four projects included in the TCCCP provide benefits to these groups.

G1. Community Engagement

BART's Public Participation Plan (PPP) was developed in 2011, with an update in 2015, and followed extensive outreach throughout the BART service area and guides the organizations ongoing public participation endeavors. The PPP ensures that BART utilizes effective means of providing information and receiving public input on transportation decisions from low income, minority and limited English proficient (LEP) populations.

As recommended in the PPP, BART has implemented a variety of outreach techniques for projects related to the TCCCP. In 2014, BART launched its "Fleet of the Future" outreach campaign to obtain public feedback on the design of BART's new vehicles. A series of ten events were held at BART stations and in local communities throughout the San Francisco Bay Area. Approximately 17,500 people attended the events and a total of 7,666 surveys were collected. BART staff consulted regularly with members of the disabled community, including the BART Accessibility Task Force (BATF), on the design and functionality of the new BART trains. The BATF provided hands-on feedback on all aspects of the car design.

Outreach related to the 2014 BART Vision Plan engaged over 2,000 people in exploring the tradeoffs involved in considering how BART can meet its future needs. The public helped BART staff narrow down future projects and investments BART should focus on by determining which ones are most important to the public and fit best into BART's goals of serving the Bay Area for years to come. A total of ten in-station events were held and a total of 2,551 surveys were collected.

BART's Title VI/Environmental Justice Advisory and Limited English Proficiency Advisory committees meet regularly to assist BART on all issues of policy with a focus on meeting the needs of minority and disadvantaged communities and riders. In November 2017, both committees received a presentation on the TCCCP.

In 2017, BART also partnered with MTC to conduct outreach on its Core Capacity Transit Study, a collaborative effort to improve public transportation to and from the San Francisco core. Outreach activities consisted of two public meetings to identify investments and improvements to increase transit capacity to the San Francisco Core. Approximately 80 people participated in the public meetings.

Outreach to Disadvantage or Low-Income Communities:

- The PPP outlines strategies to engage disadvantaged and low-income communities, including: Translation of flyers and other meeting materials and interpretation services
- Outreach to Community Based Organizations (CBOs)
- Providing notification using Ethnic Media
- Hosting meetings in accessible locations

Additional Outreach activities include:

- Fleet of the Future New Train Car Model
- BART Vision – Future BART

- Embarcadero-Montgomery Capacity Implementation and Modernization Study
- Better BART
- MTC Plan Bay Area 2040
- MTC Core Capacity Transit Study
- Hayward Maintenance Complex Noise Study

Negative Impacts to Community

As noted previously, the CE for the Transbay Corridor Core Capacity Program noted no negative impacts to the community from TCMP implementation.

Effect of Public Participation

Because of the community feedback received, significant changes were made to the design of the Fleet of the Future cars, including:

- Wheelchair locations within the train car
- The number and locations of tripod standing poles
- Location and design of bike racks

Specific to bike racks: when the pilot cars were developed, the Board directed staff to test different designs for bikes onboard, so of the initial 10 pilot cars:

- Six had one bike rack with slots for three bikes
- Two had one multi-purpose space (open area with bar)
- Two had both a bike rack and a multi-purpose space

Research with cyclists in 2019 showed that while they liked having a dedicated space for bikes, the onboard rack was rated poorly on most attributes. Due to this feedback, BART recommended that the Board proceed with the open area, rather than the bike racks. The Board also decided to incorporate two bike/open areas per car rather than one.

Continued Public Engagement

Additionally, later in-service feedback and surveys drove BART to reinclude the bar/straps configuration and inclusion of two bike areas per car. Other items driven by specific outreach, surveys and feedback, include:

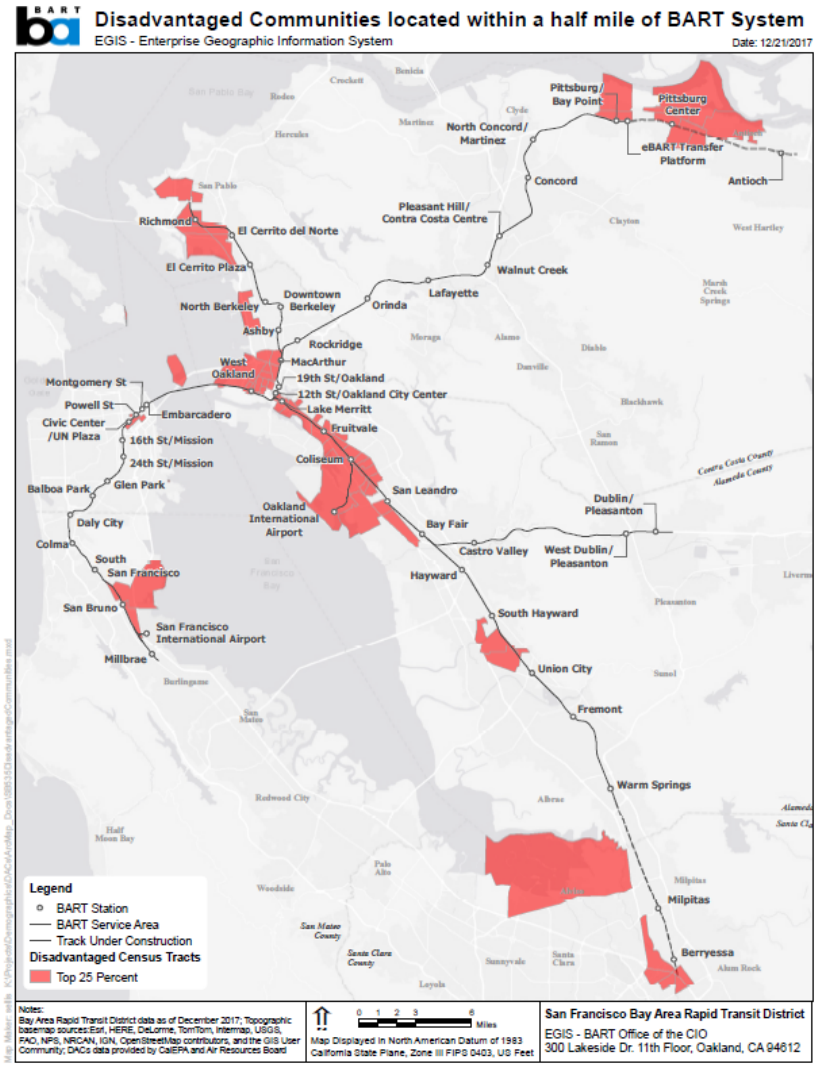
- Seat height
- Seat cushion thickness
- Legroom between seats near door and first row of forward-facing seats
- Overhead straps of varying lengths
- Overhead bars and strap configuration at center door
- Arm rests (decision not to include in most locations)
- Information set displayed on the passenger information system

Every other year, BART conducts a Customer Satisfaction Survey (2018 BART Customer Satisfaction Survey). BART's Customer Satisfaction Study is a tool to help BART prioritize efforts to achieve higher levels of customer satisfaction. The study involves surveying BART customers every two years to determine how well BART is meeting customers' needs and expectations. BART will continue to engage the public through these surveys.

G2. Location in Disadvantaged/Low-Income Community

Specifically, designated disadvantaged communities (DACs) located along/within a half mile of the BART line and to the TCCCP can be seen in Figure 18. The metric used for this DACs analysis is CalEnviroScreen's Disadvantaged Communities definition. The Core Capacity Corridor includes nine BART stations located directly within disadvantaged communities. Additionally, for the most overburdened section of the Core Capacity corridor from West Oakland to Embarcadero Station, the West Oakland Station is also located in a disadvantaged community. In total, at least 15 of the over 50 existing and planned BART stations are in disadvantaged communities. This is equal to 30 percent of all stations.

Figure 18. Disadvantaged Communities Located within a half mile of the BART System



H. OTHER

Private Investments

Not Applicable to this application.

Rail Investments

Not applicable to this application.

I. APPENDICES

Appendix I: Project Programming Request Forms

Appendix II: Performance Indicators and Measures

Appendix III: State Highway System Project Impact Statement (FORM CTC-0002)

Appendix IV: Application Letters of Support

- Elected Officials
- City of San Francisco
- City of Oakland
- San Francisco Transit Riders
- Bay Area Council
- Low Income Investment Fund
- Coalition for Clean Air
- Greenbelt Alliance
- The Unity Council

Appendix V: TCMP Ridership Modeling and Methodology

Appendix VI: BART Outreach to Disadvantaged Communities

Appendix VII: BART Public Participation Plan

Appendix VIII: BART Fatalities and Collisions Table

APPENDIX I—PROJECT PROGRAMMING REQUEST (PPR)

There are four PPRs submitted for this SCCP application. Per CTC guidance, the PPR forms include the overall project segment (TCMP through Transbay Corridor), as well as separate PPR forms for each contract:

1. TCMP through Transbay Corridor
2. TCMP - Switch Machine Cabling Contract
3. TCMP - MacArthur/Downtown Oakland Interlock Cable Upgrade Contract
4. TCMP - CBTC Design-Build Contract

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (NEW 02/2020)

PPR ID
ePPR-6000-2021-0001 v1

Amendment (Existing Project) ☐ YES ☒ NO					Date	06/22/2020 05:55:36
Programs ☐ LPP-C ☐ LPP-F ☒ SCCP ☐ TCEP ☐ STIP ☐ Other						
District	EA	Project ID	PPNO	Nominating Agency		
04				Caltrans HQ		
County	Route	PM Back	PM Ahead	Co-Nominating Agency		
Contra Costa				Metropolitan Transportation Commission		
Alameda				MPO	Element	
San Francisco				MTC	Mass Transit (MT)	
Project Manager/Contact			Phone	Email Address		
Nikki Foletta			510-874-7346	nfolett@bart.gov		

Project Title

Train Control Modernization Project (All Contracts)

Location (Project Limits), Description (Scope of Work)

The Train Control Modernization Program will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco, and is located in Alameda and San Francisco counties. This Congested Corridors Scope element will fund the TCMP through the Bay Area's Transbay Tube, allowing BART to achieve shorter headways and increased capacity, to operate 28 regularly scheduled trains per hour on the trunk line between Daly City and the Oakland Wye. The TCMP includes the replacement of the existing train control systems with a new train control system, as well as update the train control power cables and interlock cables within the existing right-of-way.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly:	16,17,18,19,20,22,25,14,15	Senate:	7,9,10,11,13	Congressional:	17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase		08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report		08/01/2015
End Environmental Phase (PA&ED Milestone)		07/01/2017
Begin Design (PS&E) Phase		06/01/2018
End Design Phase (Ready to List for Advertisement Milestone)		01/01/2021
Begin Right of Way Phase		01/01/2021
End Right of Way Phase (Right of Way Certification Milestone)		01/01/2021
Begin Construction Phase (Contract Award Milestone)		08/01/2020
End Construction Phase (Construction Contract Acceptance Milestone)		08/01/2031
Begin Closeout Phase		09/01/2031
End Closeout Phase (Closeout Report)		12/01/2031

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (NEW 02/2020)

PPR ID
ePPR-6000-2021-0001 v1

Date 06/22/2020 05:55:36

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor and Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Date 06/22/2020 05:55:36

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10000000000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63543065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	0	16.44	-16.44
			PM 10 Tons	15.46	18.11	-2.65
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3330494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3336	1924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (NEW 02/2020)

PPR ID
ePPR-6000-2021-0001 v1

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, Alameda, San Francisco				

Project Title

Train Control Modernization Project (All Contracts)

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON									San Francisco Bay Area Rapid Trans
TOTAL									
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)	12,129							12,129	
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		1,129,051						1,129,051	
TOTAL	12,129	1,129,051						1,141,180	

Fund #1:	Other State - Transit and Intercity Rail Capital Program (TIRCP) (Committed)							Program Code
Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		318,600						318,600	
TOTAL		318,600						318,600	

Fund #2:	Local Funds - Bart Revenue (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)	12,129							12,129	
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		40,797						40,797	
TOTAL	12,129	40,797						52,926	

Fund #3:	FTA Funds - FTA - 5309(b) - New Starts Small Starts and Core (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		397,240						397,240	
TOTAL		397,240						397,240	

PPR ID
ePPR-6000-2021-0001 v1

Fund #4:	State SB1 SCCP - Solution for Congested Corridors Program (Uncommitted)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		60,000						60,000	
TOTAL		60,000						60,000	

Fund #5:	Local Funds - Measure RR (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		312,414						312,414	
TOTAL		312,414						312,414	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0002 v3

Amendment (Existing Project) ☐ YES ☒ NO					Date	07/13/2020 11:56:15
Programs ☐ LPP-C ☐ LPP-F ☒ SCCP ☐ TCEP ☐ STIP ☐ Other						
District	EA	Project ID	PPNO	Nominating Agency		
04				Caltrans HQ		
County	Route	PM Back	PM Ahead	Co-Nominating Agency		
Contra Costa				Metropolitan Transportation Commission		
Alameda				MPO	Element	
San Francisco				MTC	Mass Transit (MT)	
Project Manager/Contact			Phone	Email Address		
Nikki Foletta			510-874-7346	nfolett@bart.gov		

Project Title

Train Control Modernization Project (Switch Machine Cabling Contract)

Location (Project Limits), Description (Scope of Work)

The Switch Machine Cabling Contract will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Alameda and San Francisco counties. The Switch Machine Cabling contract will include upgrading raceway, power and communication cables at 21 train control rooms and 26 wayside interlocks and associated switches, including the power cable from the Station House Power to the Train Control Rooms in 22 locations. This scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly:	16,17,18,19,20,22,25,14,15	Senate:	7,9,10,11,13	Congressional:	17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase		08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report		08/01/2015
End Environmental Phase (PA&ED Milestone)		09/01/2017
Begin Design (PS&E) Phase		06/01/2018
End Design Phase (Ready to List for Advertisement Milestone)		07/01/2020
Begin Right of Way Phase		07/01/2020
End Right of Way Phase (Right of Way Certification Milestone)		07/01/2020
Begin Construction Phase (Contract Award Milestone)		07/01/2021
End Construction Phase (Construction Contract Acceptance Milestone)		12/01/2025
Begin Closeout Phase		10/01/2025
End Closeout Phase (Closeout Report)		06/01/2026

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0002 v3

Date 07/13/2020 11:56:15

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor / Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Date 07/13/2020 11:56:15

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

PPR ID
ePPR-6000-2021-0002 v3

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63,543,065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0002 v3

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, Alameda, San Francisco				

Project Title

Train Control Modernization Project (Switch Machine Cabling Contract)

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON								
TOTAL								

Implementing Agency
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans

Proposed Total Project Cost ($1,000s)								
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		48,330						48,330
TOTAL		48,330						48,330

Notes

Fund #1:	State SB1 SCCP - Solution for Congested Corridors Program (Uncommitted)							Program Code
Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON								
TOTAL								

Funding Agency

Proposed Funding ($1,000s)								
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		45,150						45,150
TOTAL		45,150						45,150

Notes

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0002 v3

Fund #2:	Local Funds - Measure RR (Committed)								Program Code
Existing Funding ($1,000s)									
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									Measure RR
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		3,180						3,180	
TOTAL		3,180						3,180	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0003 v2

Amendment (Existing Project) ☐ YES ☒ NO						Date	07/13/2020 11:57:42
Programs ☐ LPP-C ☐ LPP-F ☒ SCCP ☐ TCEP ☐ STIP ☐ Other							
District	EA	Project ID	PPNO	Nominating Agency			
04				Caltrans HQ			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
Alameda				Metropolitan Transportation Commission			
San Francisco				MPO	Element		
Contra Costa				MTC	Mass Transit (MT)		
Project Manager/Contact			Phone	Email Address			
Nikki Foletta			510-874-7346	nfolett@bart.gov			

Project Title

BART Train Control Modernization Program (MacArthur/Downtown Oakland Interlock Cabling Upgrade Contract)

Location (Project Limits), Description (Scope of Work)

The Downtown Oakland Interlock Upgrade Contract will be implemented at MacArthur and Downtown Oakland BART stations, and will affect service through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Alameda and San Francisco counties. The Downtown Oakland Interlock Upgrade Contract includes installation of new surface mounted train control raceways and associated cables to new Switch Power Supply Cabinets (SPSC) and associated interlock switches will be designed along the K Line from MacArthur Train Control Room to Interlocking K23, K25 and K35. This scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly:	16,17,18,19,20,22,25,14,15	Senate:	7,9,10,11,13	Congressional:	17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase		08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report		08/01/2015
End Environmental Phase (PA&ED Milestone)		09/01/2017
Begin Design (PS&E) Phase		01/01/2020
End Design Phase (Ready to List for Advertisement Milestone)		01/01/2021
Begin Right of Way Phase		01/01/2021
End Right of Way Phase (Right of Way Certification Milestone)		01/01/2021
Begin Construction Phase (Contract Award Milestone)		02/01/2022
End Construction Phase (Construction Contract Acceptance Milestone)		06/01/2024
Begin Closeout Phase		04/01/2024
End Closeout Phase (Closeout Report)		12/01/2024

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0003 v2

Date 07/13/2020 11:57:42

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor and Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Date 07/13/2020 11:57:42

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

PPR ID
ePPR-6000-2021-0003 v2

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63,543,065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0003 v2

District	County	Route	EA	Project ID	PPNO
04	Alameda, San Francisco, Contra Costa				

Project Title

BART Train Control Modernization Program (MacArthur/Downtown Oakland Interlock Cabling Upgrade Contract)

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON									San Francisco Bay Area Rapid Trans
TOTAL									
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		14,850						14,850	
TOTAL		14,850						14,850	

Fund #1:	State SB1 SCCP - Solution for Congested Corridors Program (Uncommitted)								Program Code
Existing Funding ($1,000s)									
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		14,850						14,850	
TOTAL		14,850						14,850	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0004 v1

Amendment (Existing Project) ☐ YES ☒ NO						Date	07/13/2020 11:58:42
Programs ☐ LPP-C ☐ LPP-F ☒ SCCP ☐ TCEP ☐ STIP ☐ Other							
District	EA	Project ID	PPNO	Nominating Agency			
04				Caltrans HQ			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
Alameda				Metropolitan Transportation Commission			
Contra Costa				MPO	Element		
San Francisco				MTC	Mass Transit (MT)		
Project Manager/Contact			Phone	Email Address			
Nikki Foletta			510-874-7346	nfolett@bart.gov			

Project Title

Train Control Modernization Project (CBTC)

Location (Project Limits), Description (Scope of Work)

The CBTC Contract will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is located in Alameda and San Francisco counties. The CBTC Contract will replace the existing train control system with a new communications-based train control system, allowing BART to achieve the shorter headways needed to operate more regularly scheduled trains through the Transbay Corridor. This scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly:	16,17,18,19,20,22,25,14,15	Senate:	7,9,10,11,13	Congressional:	17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase		08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report		08/01/2015
End Environmental Phase (PA&ED Milestone)		09/01/2017
Begin Design (PS&E) Phase		09/01/2017
End Design Phase (Ready to List for Advertisement Milestone)		09/01/2017
Begin Right of Way Phase		09/01/2017
End Right of Way Phase (Right of Way Certification Milestone)		09/01/2017
Begin Construction Phase (Contract Award Milestone)		08/01/2020
End Construction Phase (Construction Contract Acceptance Milestone)		08/01/2031
Begin Closeout Phase		09/01/2031
End Closeout Phase (Closeout Report)		12/01/2031

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0004 v1

Date 07/13/2020 11:58:42

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor and Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Date 07/13/2020 11:58:42

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

PPR ID
ePPR-6000-2021-0004 v1

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	0	0	0
			Hours per Capita	63,543,065	0	63,543,065
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0004 v1

District	County	Route	EA	Project ID	PPNO
04	Alameda, Contra Costa, San Francisco				

Project Title

Train Control Modernization Project (CBTC)

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON								
TOTAL								

Implementing Agency
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans

Proposed Total Project Cost ($1,000s)								
E&P (PA&ED)								
PS&E	12,129							12,129
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		1,065,871						1,065,871
TOTAL	12,129	1,065,871						1,078,000

Notes

Fund #1:	Other State - Transit and Intercity Rail Capital Program (TIRCP) (Committed)							
Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON								
TOTAL								

Program Code

Funding Agency

Proposed Funding ($1,000s)								
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		318,600						318,600
TOTAL		318,600						318,600

Notes

Fund #2:	Local Funds - Bart Revenue (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E	12,129							12,129	
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		40,797						40,797	
TOTAL	12,129	40,797						52,926	

Fund #3:	Local Funds - Measure RR (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		309,234						309,234	
TOTAL		309,234						309,234	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0004 v1

Fund #4:	FTA Funds - FTA - 5309(b) - New Starts Small Starts and Core (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		397,240						397,240	
TOTAL		397,240						397,240	

Fund #5:	State SB1 SCCP - Solution for Congested Corridors Program (Uncommitted)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

APPENDIX II—Performance Indicators and Measures

APPENDIX II—PERFORMANCE INDICATORS AND MEASURES

Measure	Metric	Build	Future No Build	Change	Methodology	Data/Assumptions
Congestion Reduction	Project Area, Corridor, County, or Regionwide VMT per capita and total VMT	0	Total: 10.7 million Per trip: 13.7	Total: 10.7 million Per trip: 13.7	Cal-B/C v. 7.2: Per trip length x (new person trips on rail * percent trips from parallel highway / vehicle occupancy factor)	***Annual Person-Trips*** — No Build / Build Base (Year 1): 127,086,130 / 171,152,768 Forecast (Year 20): 127,086,130 / 186,252,468 ***Percent Trips during Peak***: 100% ***Percent New Trips from Parallel Highway***: 79% Maximum person-trips occur by Year 7 Average trip distance of auto trips replaced with project = 13.7 miles
	Person Hours of Travel Time Saved	63,543,065	0	63,543,065	Cal-B/C v. 7.2: Travel time savings per trip x (existing users + .5 x new users)	Travel time savings per trip = 1.5 minutes, based on reduction of headways between trains
System Reliability	Transit Service On-Time Performance	90.1% - 91.2%	89% (as of 2017)	10% - 20% reduction in delays from TCMP implementation	Current On Time Performance (2017 %) + % of delays that were due to train control (10% - 20%)	In 2017, the On-Time performance was 89%. It is assumed that this on-time performance will continue if project is not implemented. Future Build case On-Time performance is estimated to be 10% - 20% better than current (2017) because 10% - 20% of delays in 2017 were due to train control issues.
Safety	Number of Fatalities over 20-year analysis period	Auto: 0 Rail: 14.7 Total: 14.7	Auto: 64.3 Rail: 12.6 Total: 76.9	Auto: -64.3 Rail: 2.1 Total: -62.2	Cal-B/C v. 7.2: fatality rate per million VMT x annual VMT / 1,000,000	Cal-B/C v. 7.2: Statewide auto fatality rate = 0.006 per million VMT Passenger rail fatality rate = 0.0555 per million VMT
	Number of Serious Injuries over 20-year analysis period	Auto: 0 Rail: 66.7 Total: 66.7	Auto: 3105.5 Rail: 57.3 Total: 3162.8	Auto: -3105.5 Rail: 9.4 Total: 3096.1	Cal-B/C v. 7.2: injury rate per million VMT x VMT / 1,000,000	Cal-B/C v. 7.2: Statewide injury rate = 0.29 per million VMT Passenger rail injury rate = 0.2519 per million VMT

<table>
<tr><td></td><td>Number or Rate of Property Damage Only and Non-Serious Injury Collisions over 20-year analysis period</td><td>Auto: 0
Rail: 73.5
Total: 73.5</td><td>Auto: 5,889.8
Rail: 63.1
Total: 5952.9</td><td>Auto: -5,889.8
Rail: 10.4
Total: -5879.4</td><td>Cal-B/C v. 7.2: PDO rate per million VMT x VMT / 1,000,000</td><td>Cal-B/C v. 7.2: Statewide PDO rate = 0.55 per million VMT
Passenger rail PDO rate = 0.2775 per million VMT</td></tr>
<tr><td></td><td>Accident Cost Savings</td><td>$550 million</td><td>0</td><td>$550 million</td><td>Cal-B/C v. 7.2: Change in fatalities, injuries, & PDO collisions x recommended $ values per type of collision</td><td>Cal-B/C v. 7.2:
<table><tr><th>Event</th><th>Pass Train</th><th>Auto</th></tr><tr><td>Fatality</td><td>$9,800,000</td><td>$10,800,000</td></tr><tr><td>Injury</td><td>$180,500</td><td>$148,800</td></tr><tr><td>Prop Damage</td><td>$78,800</td><td>$9,700</td></tr></table></td></tr>
<tr><td>Economic Development and Job Creation</td><td>Jobs Created (Direct and Indirect)</td><td>$60 million SCCP investment = 660 jobs

$1.14 billion overall TCMP investment = 12,540 jobs</td><td>NA</td><td>660 jobs for SCCP investment

12,540 jobs for overall TCMP investment</td><td>Caltrans uses 11 jobs per $1 million invested in 2018 Executive Fact Book</td><td>Caltrans Executive Factbook</td></tr>
<tr><td rowspan="7">Air Quality & Greenhouse Gas Emissions</td><td>Particulate Matter 2.5 (PM 2.5)</td><td>0</td><td>16.44</td><td>-16.44</td><td rowspan="7">Calculated in Cal-B/C v. 7.2</td><td rowspan="7">Based on change in auto VMT from trips replaced with transit (see above), as well as on new rail VMT associated with new service
<table><tr><td>Annual Vehicle-Miles</td><td>No Build</td><td>Build</td></tr><tr><td>Base (Year 1)</td><td>11,366,126</td><td>13,237,856</td></tr><tr><td>Forecast (Year 20)</td><td>11,366,126</td><td>13,237,856</td></tr><tr><td>Average Vehicles/Train</td><td>8</td><td>9</td></tr></table></td></tr>
<tr><td>Particulate Matter 10 (PM 10)</td><td>15.46</td><td>18.11</td><td>-2.65</td></tr>
<tr><td>Carbon Dioxide (CO2)</td><td>0</td><td>3,330,494.57</td><td>-3,330,494.57</td></tr>
<tr><td>Volatile Organic Compounds (VOC)</td><td>7.29</td><td>504.05</td><td>-496.76</td></tr>
<tr><td>Sulphur Dioxides (SOX)</td><td>0</td><td>32.91</td><td>-32.91</td></tr>
<tr><td>Carbon Monoxide (CO)</td><td>16.86</td><td>12,046.20</td><td>-12,029.34</td></tr>
<tr><td>Nitrogen Oxides (NOX)</td><td>135.45</td><td>742.46</td><td>-607.02</td></tr>
</table>

	Total	175.05	3,343,854.74	-3,343,679.69		
Cost Effectiveness	Cost Benefit Ratio	1.6	N/A	1.6	Cal-B/C v. 7.2	As indicated elsewhere in table and in accompanying Excel file

Efficient Land Use	Land Use Efficiency Supplement's Land Use Efficiency Indicators	• The project is located in a jurisdiction that has adopted:
		  ○ A by-right (nondiscretionary) approval process for multifamily residential development
		  ○ A density bonus ordinance whose allowable density increase exceeds the requirements of State Density Bonus Law
		• The project is located within a half-mile of a high-quality transit corridor and major transit stop,, as defined by Public Resources Code sections 21155 and 21064.3
		• The project furthers the forecasted development pattern of the applicable Regional Transportation Plan's Sustainable Communities Strategy
		• In 2016, the BART Board of Directors adopted an affordable housing policy and performance targets setting a goal of 35 percent affordable housing on its station sites which could result in an additional 7,000 affordable units over the next ten years
		Pursuant to CA Public Utilities Code 29010 (AB2923 2923, Chiu/Grayson, 2018), by July 1, 2022, local jurisdictions are required to ensure that all developable BART-owned property near stations in Alameda, Contra Costa, and San Francisco Counties will have zoning consistent with BART's 2017 TOD Guidelines				

Accessibility	Number of Jobs Accessible by Mode and Access to Key Destinations by Mode	3,336 Jobs (average of 8 stations)	1,924 Jobs (average of 8 stations)	+ 1,412 Jobs accessible by BART	Using an average walking time of 3 mph, it will take passengers 5 minutes to walk 0.25 miles to the station (No Build). The TCMP saves 1.5 minutes due to shorter headways, equating to an extra 0.075 miles distance to the station (Build).	Analysis using U.S. Census Bureau's Local Employment Household Dynamics On-the-Map tool. All employment numbers from 2017. Assumed an average walking time of 3mph. The number of jobs was found by taking the average of the areas around 8 BART stations in the Corridor (Embarcadero, Montgomery, Powell, Civic Center/UN Plaza, West Oakland, 12th Street/Oakland, 19th Street/Oakland, MacArthur).
	% of Population Defined as Low Income or Disadvantaged within ½ mile of rail station,	33% Low Income within a ½ mile of BART station	33% Low Income with a ½ mile of BART Station	No Change	The total population within ½ mile of BART stations (full system, partial census tract) is 429,416. The	Low Income Census Tract Data, Census Bureau

	ferry terminal, or high-frequency bus stop				population defined as low income within ½ mile of BART stations (full system, partial census tract) is 142,610. 142,610 / 429,416 = 33.2%	

APPENDIX III—STATE HIGHWAY SYSTEM PROJECT IMPACT ASSESSMENT (FORM CTC-0002)

STATE OF CALIFORNIA - CALIFORNIA TRANSPORTATION COMMISSION
STATE HIGHWAY SYSTEM PROJECT IMPACT ASSESSMENT APPENDIX III
CTC-0002 (NEW 9/2019)
Page 10

I. APPLICANT INFORMATION

1. NOMINATING AGENCY
Caltrans

2. NAME OF PERSON SUBMITTING THE NOMINATION	3. TITLE
4. PHONE	**5. EMAIL**

II. PROJECT INFORMATION

6. PROJECT TITLE
Train Control Modernization Program

7. PERCENT OF PROJECT AREA WITHIN STATE R/W	8. TOTAL CONSTRUCTION COST WITHIN STATE R/W
0%	0%

9. ANTICIPATED ENVIRONMENTAL DOCUMENT FOR:
CEQA: Statutory Exemption NEPA: Categorical Exclusion

10. CHECK ALL OF THE FOLLOWING THAT APPLY:

- ☐ PROJECT IS NOT IN AND WILL NOT DISCHARGE INTO AN ENVIRONMENTALLY SENSITIVE AREA AND IS NOT EXPECTED TO NEED AN EIR/EIS
- ☐ PROJECT DOES NOT REQUIRE FHWA COORDINATION OR APPROVAL
- ☐ PROJECT DOES NOT REQUIRE RIGHT OF WAY DEDICATION FROM CALTRANS
- ☐ PROJECT DOES NOT REQUIRE CALTRANS STRUCTURE DESIGN APPROVAL FOR MODIFICATION TO A CALTRANS BRIDGE OR STRUCTURE.
- ☐ PROJECT DOES NOT REQUIRE DESIGN EXCEPTIONS TO MANDATORY DESIGN STANDARDS *(REF. HIGHWAY DESIGN MANUAL, DESIGN INFORMATION BULLETIN 78)*
- ☐ PROJECT DOES NOT REQUIRE ENCHROACHMENT EXCEPTIONS APPROVAL *(REF. ENCHROACHMENT PERMIT MANUAL, CH. 300)*

11. DESCRIBE THE SCOPE OF WORK TO BE DONE WITHIN STATE HIGHWAY RIGHT-OF-WAY
Not Applicable

12. EXPECTED LEVEL OF CALTRANS INVOLVEMENT:

☐ **Cooperative Agreement Oversight Process:** *Cooperative Agreement oversight process reviews are generally used for projects with a construction cost within the State Right of Way greater than $1 Million.*

☐ **Encroachment Permits Oversight Process:** *Office of Encroachment Permits oversight process reviews are generally used for projects with a construction cost within the State Right of Way of $1 Million or less.*

III. CALTRANS PROJECT SUPPORT

SIGNATURE: _____ **DATE:** _____

PRINT NAME: _____

Deputy District Director Program Project Management

The above signature indicates, based on available information:

1. Caltrans supports the project;
2. The project is consistent with Caltrans's standards;
3. Durations and start and end dates to achieve the major milestones are reasonable;
4. The funding plan is reasonable.

IV. ATTACHMENTS

The Project Programming Request must be provided to Caltrans with this form. Additional information may be required by Caltrans, including, but, not limited to: (1) project level documents and (2) draft funding application(s).

Appendix IV: Application Letters of Support

- Elected Officials
- City of San Francisco
- City of Oakland
- San Francisco Transit Riders
- Bay Area Council
- Low Income Investment Fund
- Coalition for Clean Air
- Greenbelt Alliance
- The Unity Council

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0115

California Legislature

June 19, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: San Francisco Bay Area Rapid Transit District's application to the Solutions for Congested Corridors Program

Dear Mr. Weiss:

As representatives of the San Francisco Bay Area, we write to express our support for the San Francisco Bay Area Rapid Transit District's (BART) application to the 2020 Solutions for Congested Corridors Program (SCCP). The California Department of Transportation and Metropolitan Transportation Commission have nominated BART's Train Control Modernization Program (TCMP), a component of the Transbay Corridor Core Capacity Program, for the SCCP and have ranked it the highest out of the region's applications.

The TCMP will allow BART to increase the number of trains operating within the Transbay Tube from 23 to 28 trains per hour, helping to relieve congestion within the heavily utilized the corridor. The project will reduce onboard train crowding by over 30%, increase reliability and decrease system delays, boost transit ridership, relieve highway congestion, and support sustainable growth around BART stations.

The SCCP grant proposal is for the final $60 million needed to fully fund the TCMP segment through the Transbay Tube. This funding will leverage more than $1 billion in local, state and federal funding, which will support the entire Core Capacity Program including 252 new rail cars, rail car storage at the Hayward Maintenance Complex, and new traction power substations.

This project is vital to the modernization of the 40+ year old BART system and enhanced reliability for Bay Area commuters. We thank you for your consideration of BART's application and welcome the state's ongoing support of the Bay Area's transportation infrastructure.

Sincerely,

Bill Quirk

Bill Quirk
Assemblymember, District 20

David Chiu
Assemblymember, District 17

Kevin Mullin
Assemblymember, District 22

Phil Ting
Assemblymember, District 19

Buffy Wicks
Assemblymember, District 15

Jerry Hill
Senator, District 13

Scott Wiener
Senator, District 11

OFFICE OF THE MAYOR
SAN FRANCISCO

LONDON N. BREED
MAYOR

June 5, 2020
Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

I am writing to request your support of the Bay Area Rapid Transit District's (BART's) grant application for the California's Solutions for Congested Corridors Program. The reliability of public transportation is an important priority for our City and one where I have been personally invested as Mayor. On an average weekday, over 180,000 people travel into San Francisco on BART. While our current, unprecedented situation has changed those numbers, I have no doubt that they will return in the future. We want to be prepared to handle that recovery and expected future growth. BART's Transbay Corridor Core Capacity Project will help us ensure we are prepared to do so, while reducing congestion and greenhouse gas emissions.

San Francisco is a focal point for the region's jobs, healthcare, education, culture, and more. Our success relies staying connected, and BART plays a critical role in doing so. This proposed grant will help fund an expansion of transit service through the Transbay Tube, which will ensure that people throughout the region can access important services and patron our businesses, but also ensure our employers have access to talent from across the Bay Area.

Thank you for the California Transportation Commission's continued commitment to modernizing and maintaining our public transportation system. I respectfully urge you to recommend the award of California's Solutions for Congested Corridors Program funds to this project. I look forward to your response and thank you for your consideration.

Sincerely,

London N. Breed
Mayor

1 DR. CARLTON B. GOODLETT PLACE, ROOM 200
SAN FRANCISCO, CALIFORNIA 94102-4681
TELEPHONE: (415) 554-6141

CITY OF OAKLAND

1 FRANK H. OGAWA PLAZA • 3RD FLOOR • OAKLAND, CALIFORNIA 94612

Office of the Mayor
Libby Schaaf

(510) 238-3141
FAX: (510) 238-4731
TDD: (510) 238-3254

May 19, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

On behalf of the City of Oakland, I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application. The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and encouraging mass transit options.

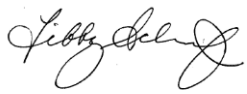
As the mayor of Oakland, I strongly support public transit service as an equitable and environmentally sustainable way to provide mobility for our community. We strongly believe increasing public transit ridership, particularly along the Transbay Corridor, is essential to improve air quality for residents in our frontline communities of West Oakland and East Oakland. We also believe that by improving transit service, our disadvantaged residents will gain improved access to jobs and housing opportunities across the bay area. We also recognize that improving BART's core capacity through the TCMP will complement both BART and the City's shared vision for transit-oriented development through BART's TOD projects at MacArthur Village, West Oakland BART, Fruitvale and Lake Merritt Stations.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long-term ridership trends at BART require additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving. This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will

benefit from increased capacity and reduced crowding, as well as reduced greenhouse gas emissions from fewer drivers on the road.

I fully support BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program. If you have any questions regarding our support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,



Libby Schaaf,
Mayor of the City of Oakland

San Francisco Transit Riders
P.O. Box 193341, San Francisco, CA 94119
www.sftransitriders.org | hello@sftransitriders.org | @SFTRU

June 5, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

San Francisco Transit Riders is the city's independent, nonprofit advocate for efficient, accessible, and always growing public transit.

I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application.

The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and encouraging mass transit options.

We recognize that under normal circumstances, BART is at or past capacity during peak periods along the transbay corridor. We also know that the Bay Bridge is similarly congested, and that two-thirds of the people crossing the Bay are doing so on BART. We are running out of space, and urgently need increased capacity on BART in order to enable the mobility of Bay Area residents. We see the TCMP as a cost effective and necessary improvement to increase capacity in the relative near term.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long term ridership trends at BART show the need for additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving.

San Francisco Transit Riders
P.O. Box 193341, San Francisco, CA 94119
www.sftransitriders.org | hello@sftransitriders.org | @SFTRU

This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will benefit from increased capacity and reduced crowding, as well as reduced greenhouse gas emissions as more people can opt for BART over driving private cars.

San Francisco Transit Riders fully supports BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program.

If you have any questions regarding our support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,

Cat Carter
Interim Executive Director
San Francisco Transit Riders

BAYAREA COUNCIL
Shape the Future

May 21, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

On behalf of the Bay Area Council—a member based non-profit representing over 300 businesses in the Bay Area—I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application. The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and encouraging mass transit options.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long-term ridership trends at BART require additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving. This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will benefit from increased capacity and reduced crowding, as well as reduced greenhouse gas emissions from fewer drivers on the road.

I fully support BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program. If you have any questions regarding our support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,

Gwen Litvak
Senior Vice President, Public Policy
Bay Area Council

capital for healthy
families & communities

June 9, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

On behalf of Low Income Investment Fund (LIIF), I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application. The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and encouraging mass transit options.

Transit-oriented development (TOD) is a primary focus area for LIIF. We use our expertise to leverage public and private dollars to provide our community-based partners and mission driven developers innovative financing solutions that address the unique and complex challenges of TOD projects. Since our inception, LIIF has deployed over $206MM to support TOD initiatives; in the process, we have helped create over 13,800 TOD affordable housing units.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long-term ridership trends at BART require additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving. This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will benefit from increased capacity and reduced crowding, as well as reduced greenhouse gas emissions from fewer drivers on the road.

LIIF fully supports BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program. If you have any questions regarding LIIF's support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,

Lucy Arellano Baglieri
Chief Strategy Officer

COALITION FOR CLEAN AIR

June 10, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

On behalf of Coalition for Clean Air, I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application. The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and air pollution, and encouraging mass transit options.

Founded in 1971, the Coalition for Clean Air is the only statewide non-profit organization focused on clean air. The Coalition for Clean Air's (CCA) mission is to protect public health, improve air quality, and prevent climate change. CCA works to reduce emissions from the transportation sector - the largest source of health-damaging and climate-disrupting air pollution in California - with a particular focus on reducing vehicle miles traveled.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long-term ridership trends at BART require additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving. This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will benefit from increased capacity and reduced crowding, as well as reduced air pollution and ghg's from fewer drivers on the road.

We fully support BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program. If you have any questions regarding our support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,

THE UNITY COUNCIL

Monday, May 18, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814
Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

On behalf of The Unity Council, I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application. The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and encouraging mass transit options.

The Unity Council is a 56-year old Social Equity Development Corporation based in East Oakland's Fruitvale neighborhood. We support families through early childhood education, workforce development, senior services and housing and built the Fruitvale Transit Village, an award winning transit-oriented development next to the Fruitvale BART station.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long-term ridership trends at BART require additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving. This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will benefit from increased capacity and reduced crowding, as well as reduced greenhouse gas emissions from fewer drivers on the road.

The Unity Council fully support BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program. If you have any questions regarding our support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,

Chris Iglesias
Chief Executive Officer

The Unity Council
1900 Fruitvale Ave, Suite 2A, Oakland, CA 94601
510-535-6900 Office • 510-534-7771 Fax • www.unitycouncil.org

Julia Randolph
Policy and Outreach Associate

Appendix V: TCMP Ridership Modeling and Methodology

APPENDIX V. TRANSBAY CORE CAPACITY PROGRAM RIDERSHIP FORECAST

TECHNICAL REFERENCE MATERIAL

The Transbay Corridor Core Capacity Program of the Bay Area Rapid Transit District (BART) will increase the throughput capacity in the most heavily used part of the BART system by increasing the number of trains operating through the Transbay Tube and the number of cars on those trains. This technical memorandum reports the projected ridership gains expected from the increased number of trains and train lengths, and describes the data, assumptions and methodology used to develop ridership projections.

INTRODUCTION

On the main trunk of the its system, from the Oakland wye through the Transbay Tube to Daly City, BART currently operates a maximum of 23 trains per hour in the peak direction, with an average of 8.9 cars per train, for a total of 204.9 cars per hour.

The Transbay Corridor Core Capacity Program includes four elements: acquisition of 306 new rail cars, construction of Hayward Maintenance Complex Phase 2 storage facility, installation of communications-based train control system, and creation of five new traction power substations. Collectively, these four elements will allow BART to increase the service frequency from four trains per hour to five trains per hour on each of BART's five rail lines, and to operate 30 trains per hour, with an average of 10 cars per train, for a total of 300 cars per hour during the peak period through the Transbay Tube.

BART anticipates completing implementation in late FY 2026, with FY 2027 as the first full year of increased frequency operations from the completed Core Capacity Program.

DATA

The projected ridership in this memorandum is primarily based on the following two data sets.

1. BART Ridership Forecast for FY 2018 through FY 2040 (see Appendix A), which includes average weekday and total annual systemwide ridership, made available by the BART staff, and
2. BART Monthly Ridership Reports, providing actual average ridership by type of day (weekday, Saturday, and Sunday), available on BART website at http://bart.gov/ridership

ASSUMPTIONS

The projections are based on the following assumptions.

1. The horizon year for ridership projection is FY 2076. This is based on a planning horizon of 50 years, with FY 2027 as the first full year of operations after the completion of the Core Capacity Program. The Core Capacity Program includes acquisition of vehicles, civil construction and the installation of systems that are

WSP USA
17th Floor
425 Market Street
San Francisco, CA 94105

Tel.: +1 415 243 4600
Fax: +1 916 243-9501
wsp.com

expected to have an average service life of 50 years, based on BART experience with existing facilities and equipment. BART experience includes mid-life overhaul of vehicles to extend their service life.

1. The average weekday systemwide ridership of 435,973, recorded in June 2016, is constrained by the capacity of the current system.

METHODOLOGY

The major steps in the process for developing the projected ridership for the Core Capacity Program are as follows:

EXISTING RIDERSHIP

During peak periods on weekdays, current ridership exceeds capacity in the Transbay Corridor. The average weekday systemwide ridership of 435,973, recorded in June 2016, occurred at a time when BART ridership was exceeding capacity in the Transbay Corridor during the peak periods. Analyses performed by BART for the Federal Transit Administration (FTA) found that the average amount of floor space per passenger was less than 5.4 square feet – the crowding standard FTA has adopted for Core Capacity funding based upon TCRP Transit Capacity and Quality of Service Manual – during the peak hour between the Embarcadero station in San Francisco and the Berkeley, Rock Ridge, and Bay Fair stations in the East Bay. Figure 1 illustrates the results of BART's analysis for FTA.

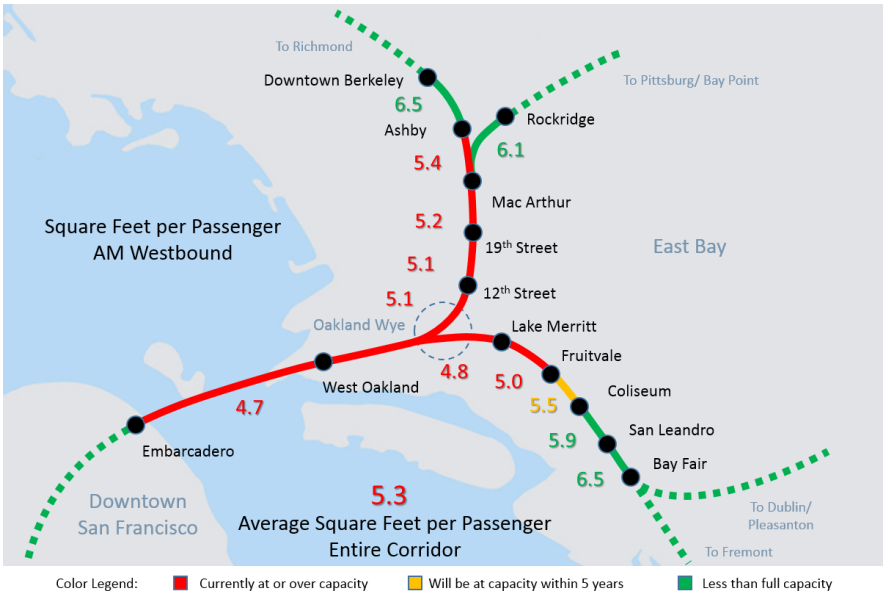


Figure 1. Square Feet per Passenger in AM Peak Hour

To predict the ridership benefits of the Transbay Core Capacity Program, the June 2016 level of 435,973 riders per day was established as the constrained baseline, as further described below. The capacity of the system through the Transbay Tube will stay constrained until the completion of the Core Capacity Program.

UNCONSTRAINED RIDERSHIP FORECAST TO FY 2040

BART has developed ridership forecast for FY 2018 to FY 2040. The forecast accounts for increases in ridership over time that can be expected to result from anticipated population and employment growth and system expansion, such as the BART extension to Silicon Valley (Berryessa extension will open in 2018) and the eBART extension in eastern Contra Costa County (expected to open in 2018). However, the BART ridership forecast does not account for ridership gains from the increased service frequency that will result from the Core Capacity Program. In

addition, the forecast is not constrained by the capacity of the BART system. The forecast average weekday systemwide unconstrained ridership for the first year of BART forecast (FY 2018), the first full year of operations after the completion of the Core Capacity Program (FY 2027), and the last year of BART forecast (FY 2040) are 431,079, 510,006 and 621,873, respectively (see Figure 2).

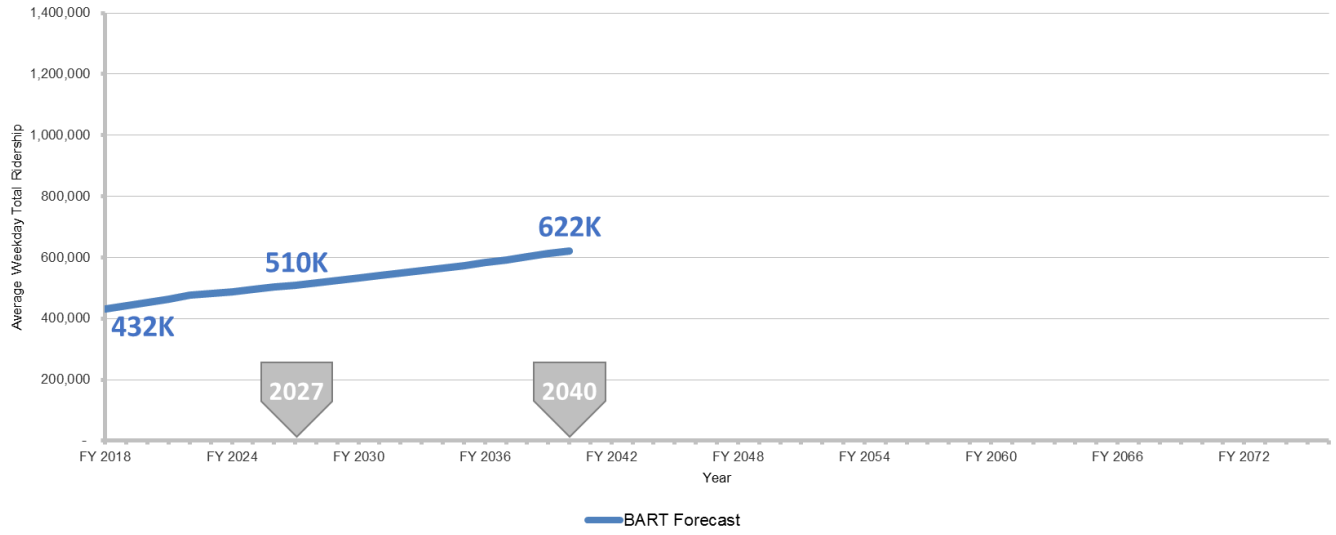


Figure 2: Unconstrained Ridership Forecast to FY 2040

UNCONSTRAINED RIDERSHIP EXTRAPOLATED TO FY 2076

Developing the ridership projections for the Core Capacity Program requires an unconstrained ridership baseline extending up to the planning horizon of FY 2076. However, the BART forecast does not extend up to FY 2076. Therefore, BART ridership forecast is extrapolated to FY 2076 using the average growth rate for the last five years of the forecast period (FY 2036 to FY 2040), which is calculated to be 1.6 percent. This results in an average weekday systemwide unconstrained extrapolated ridership of 1,106,906 for FY 2076 (see Figure 3).

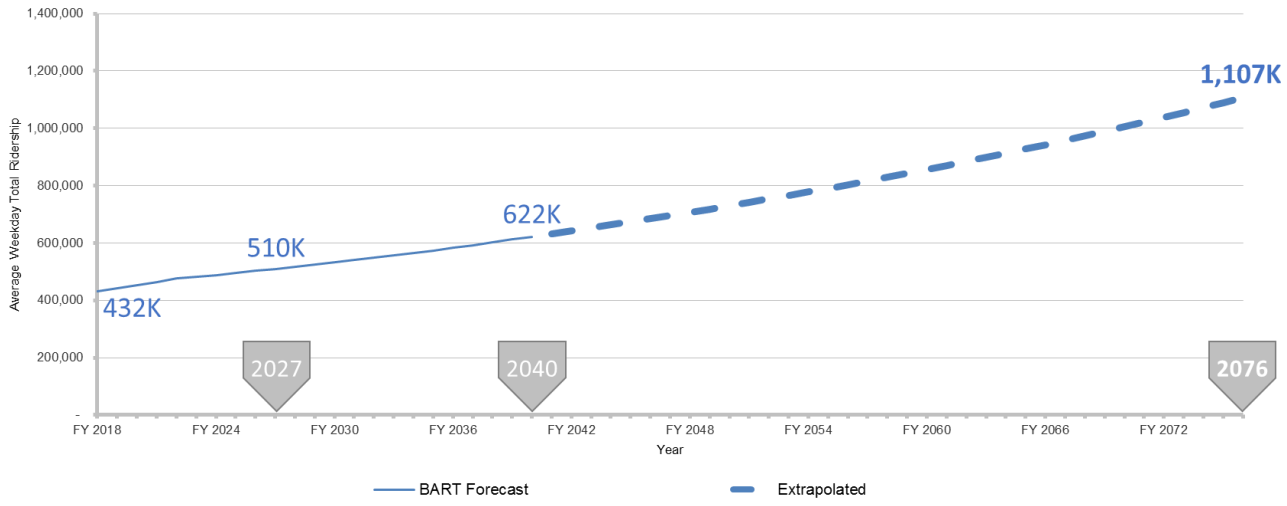


Figure 3: Unconstrained Ridership Extrapolated to FY 2076

CAPACITY-CONSTRAINED BASELINE RIDERSHIP

The current BART system does not have enough capacity to accommodate this unconstrained ridership. Therefore, the forecast and extrapolated ridership are constrained for capacity based on the June 2016 average weekday systemwide ridership of 435,973. This results in a baseline average weekday systemwide constrained ridership of 435,973 for all years except for FY 2018 (see Figure 4).

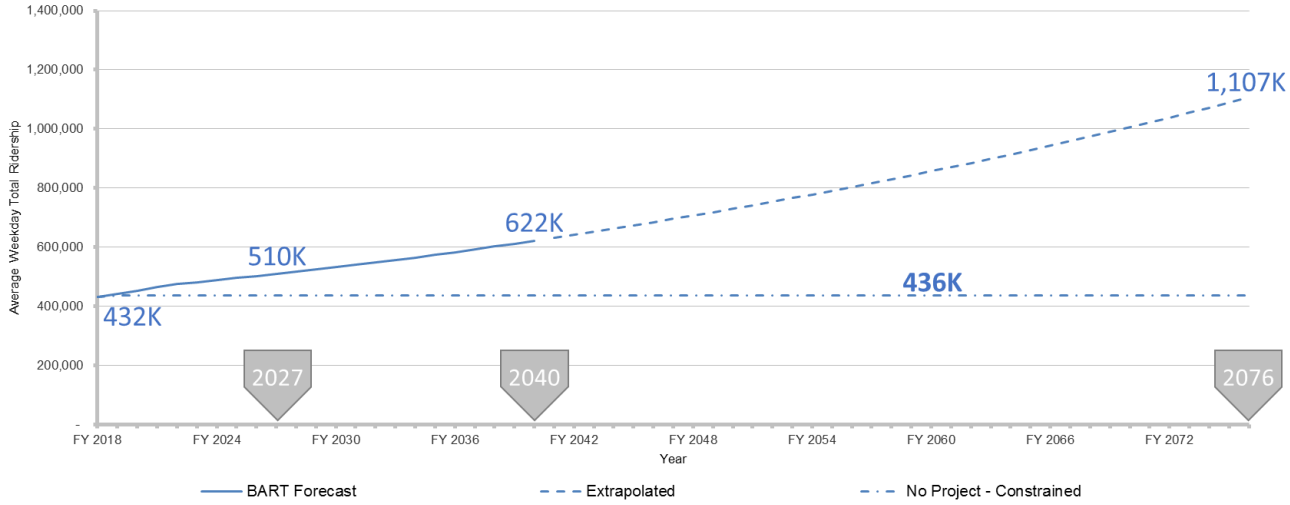


Figure 4: Capacity-Constrained Baseline Ridership

An implicit assumption in this analysis is that the peak hour constraint will not lead to greater peak spreading, with riders switching their travel to the shoulders of the peak when the trains are less crowded, and that there will not be increased off-peak travel on BART over time. This same assumption is made in the forecast of future ridership with implementation of the Core Capacity Program.

UNCONSTRAINED RIDERSHIP WITH INCREASED FREQUENCY FROM CORE CAPACITY PROGRAM

The Core Capacity Program will allow BART to increase the service frequency by 25 percent (from four trains per hour to five trains per hour) on each of the five lines of the entire BART system. To estimate the ridership increase associated with this increase in frequency of service, elasticity of BART ridership with respect to frequency is required.

To determine the estimated ridership increase from planned service frequency increases from the Core Capacity program, a research task was undertaken to find comparable types of transportation (modes) to BART and create a range. This research is shown in Table 1.

Table 1. Frequency and Ridership Increases

A 1% increase in:	***Expect ridership increase:***	**Mode**	**Source**
Service frequency/headway elasticity	+0.5%	Transit (General)	Journal of Public Transportation, Vol. 7, No. 2, 2004 – Page 48
Service frequency for commuter rail (frequency less than 50 min	+0.4%	Commuter Rail (Maximum)	Transit Capacity and Quality of Service Manual—2nd Edition – Page 1-11
Service frequency for commuter rail (frequency less than 50 min)	+0.6%	Commuter Rail (Minimum)	Transit Capacity and Quality of Service Manual—2nd Edition – Page 1-11
Service frequency in mainly central city urban environment	+0.3%	Heavy Rail	Transit Capacity and Quality of Service Manual—2nd Edition Page 1-11
Number of peak period trains	+0.48%	BART/Heavy Rail	Fehr and Peers, 2004
Service frequency	+0.08%	London Underground/Rail Rapid Transit	Transit Cooperative Research Program, TCRP Report 95, FTA, 2003 (CHAPTER 9)
Service frequency	+.15%	Direct Frequency from LA Metro Model	Internal WSP model

A straight average was estimated to show the most likely ridership increase from a 1% increase in frequency, as well as an lower and upper bound. Results are included below:

- Low ridership growth - +0.08%
- Most likely ridership growth - +0.35%
- High ridership growth – 0.6%

Increases in ridership were not estimated for decreases in station or train crowding, increased comfort, or other potential causes in increased ridership.

Based on the most-likely elasticity of 0.35, it was estimated that the 25 percent increase in service frequency will lead to an 8.8 percent increase in ridership. Adding this to the unconstrained forecast predicted by BART leads to a projected average weekday systemwide unconstrained ridership for FY 2027, FY 2040, and FY 2076 are 554,631, 676,287, and 1,203,760, respectively (see Figure 5).

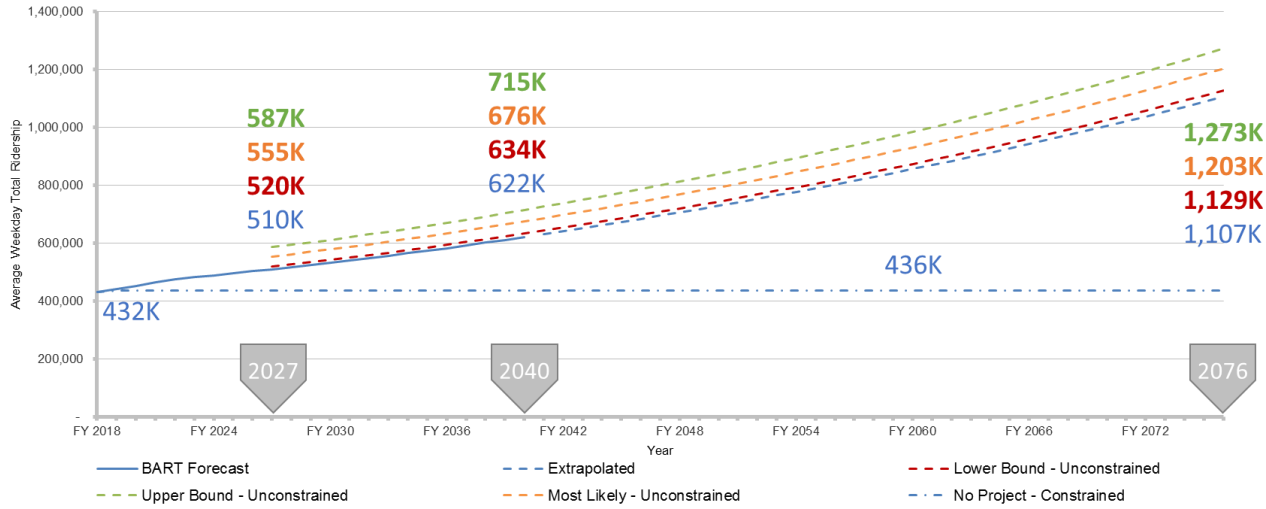


Figure 5: Unconstrained Projected Ridership with Increased Train Frequencies

This forecast of future ridership does not take into account other benefits of the Transbay Corridor Core Capacity Program that could lead to higher ridership, such as new rail cars and increased service reliability.

CAPACITY-CONSTRAINED PROJECTED RIDERSHIP

The Core Capacity Program will allow BART to increase the peak hour capacity through Transbay Tube by 46.6 percent (from 204.9 cars per hour to 300 cars per hour) during the peak period. Therefore, the capacity constrained ridership after the completion of the Core Capacity Program will be 46.6 percent higher than the current capacity constrained ridership. This leads to an average weekday systemwide capacity constrained ridership of 638,945 (see Figure 6).

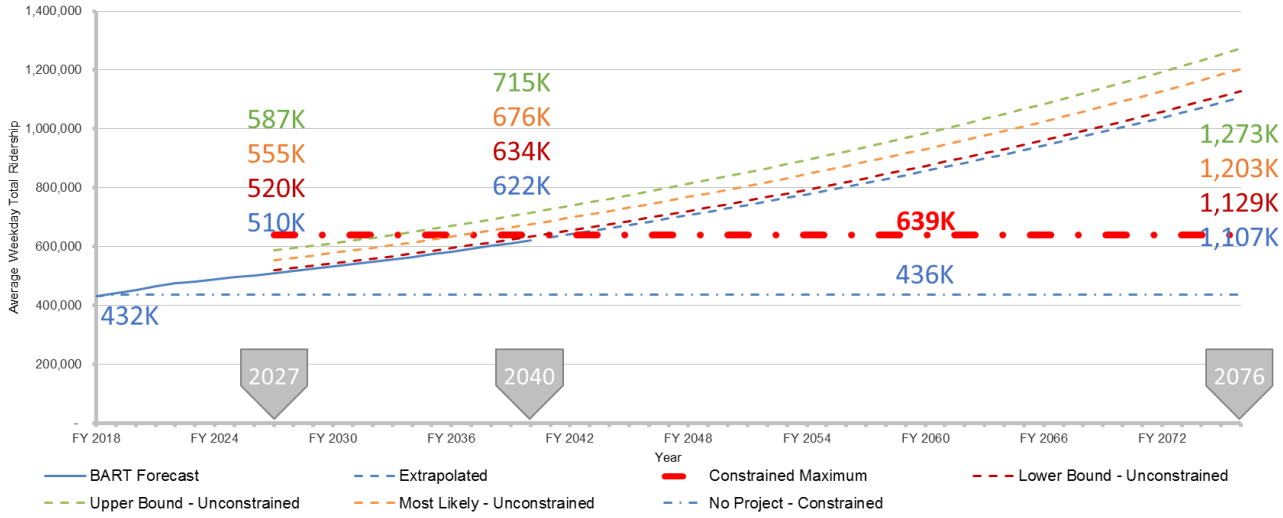


Figure 6: Capacity-Constrained Ridership

Applying this capacity-constrain to the projected unconstrained ridership reveals that the projected average weekday systemwide ridership will be constrained after FY 2037 (see Figure 7).

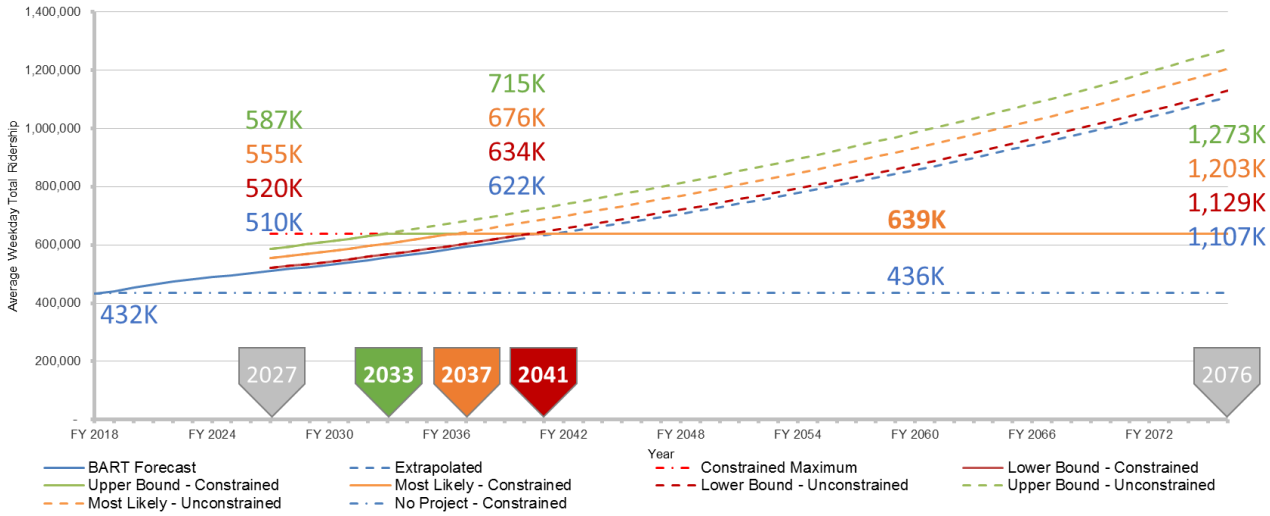


Figure 7: Capacity-Constrained Projected Ridership

The Table on the following page shows the inputs and results of the Ridership Methodology.

RESULTS AND STEPS FOR RIDERSHIP METHODOLOGY

RIDERSHIP DATA	UNIT	LOWER BOUND	UPPER BOUND	MOST LIKELY
Initial Headway (Frequency)	minutes (tph)	15 (4)		
Final Headway (Frequency)	minutes (tph)	12 (5)		
Change in Headway Frequency	percentage	25		
Frequency Ridership Elasticity	elasticity	0.08	0.60	0.35
Change in Ridership	percentage	2.0%	15.0%	8.8%
BART Forecast Total Ridership – Year 2026	average weekday trips	503 K		
First Year with Total Ridership – CONSTRAINED	Year	2041	2033	2037
Year 2027 (First Year with Frequency Change)				
BART Forecast Ridership without Frequency Change	average weekday trips	510 K		
Projected Ridership with Frequency Change - UNCONSTRAINED	average weekday trips	520 K	587 K	555 K
Increase in Ridership Due to Frequency Change - UNCONSTRAINED	average weekday trips	10 K	77 K	45 K
Year 2041 (Ridership Constrained for all Scenarios)				
BART Forecast Ridership Without Frequency Change	average weekday trips	632 K		
Projected Ridership with Frequency Change - UNCONSTRAINED	average weekday trips	645 K	727 K	687 K
Projected Ridership with Frequency Change - CONSTRAINED	average weekday trips	639 K		
Increase in Ridership Due to Frequency Change – UNCONSTRAINED	average weekday trips	13 K	95 K	55 K
Increase in Ridership Due to Frequency Change – CONSTRAINED	average weekday trips	7 K		
Year 2076 (Horizon Year)				
Extrapolated Ridership Without Frequency Change	average weekday trips	1,107 K		
Projected Ridership Due to Frequency Change - UNCONSTRAINED	average weekday trips	1,129 K	1,273 K	1,204 K
Projected Ridership Due to Frequency Change – CONSTRAINED	average weekday trips	639 K		
Increase in Ridership Due to Frequency Change – UNCONSTRAINED	Average weekday trips	22 K	166 K	97 K
Increase in Ridership Due to Frequency Change – CONSTRAINED	average weekday trips	-468 K		

APPENDIX A – BART RIDERSHIP FORECAST (FY 2018 – FY 2040)

	Average Weekday Passenger Trips				Total Annual Trips			
Year	**Core**	**SFO Extension**	**SBVX+SV SX**	**Total**	**Core**	**SFO Extension**	**SBVX+SV SX**	**Total**
FY18	374,997	50,028	6,684	431,709	109,180,489	14,725,847	1,945,943	125,852,279
FY19	374,555	50,079	16,283	440,917	109,051,546	14,740,857	4,740,890	128,533,293
FY20	382,516	51,276	19,440	453,232	111,369,406	15,093,017	5,660,088	132,122,511
FY21	389,620	52,059	22,848	464,527	113,437,952	15,323,709	6,652,103	135,413,764
FY22	396,092	52,878	26,521	475,491	115,322,214	15,564,600	7,721,679	138,608,493
FY23	400,706	53,658	27,708	482,072	116,665,671	15,794,108	8,067,127	140,526,907
FY24	405,380	54,458	28,948	488,786	118,026,489	16,029,566	8,428,263	142,484,318
FY25	410,118	55,271	30,245	495,633	119,405,791	16,268,878	8,805,809	144,480,478
FY26	415,047	56,108	31,601	502,755	120,840,836	16,515,431	9,200,521	146,556,788
FY27	420,032	56,956	33,018	510,006	122,292,347	16,764,908	9,613,192	148,670,447
FY28	424,846	57,823	34,500	517,169	123,693,844	17,020,267	10,044,651	150,758,763
FY29	429,722	58,709	36,049	524,480	125,113,443	17,281,133	10,495,766	152,890,343
FY30	434,583	59,605	37,669	531,858	126,528,853	17,544,779	10,967,446	155,041,078
FY31	439,993	60,547	39,363	539,903	128,104,062	17,821,916	11,460,641	157,386,618
FY32	445,478	61,509	41,135	548,122	129,700,931	18,105,128	11,976,348	159,782,407
FY33	451,048	62,491	42,987	556,526	131,322,696	18,394,256	12,515,609	162,232,561
FY34	456,749	63,504	44,924	565,177	132,982,443	18,692,462	13,079,516	164,754,421
FY35	462,527	64,539	46,949	574,015	134,664,649	18,997,027	13,669,212	167,330,888
FY36	468,515	65,604	49,067	583,186	136,408,249	19,310,453	14,285,893	170,004,595
FY37	474,602	66,688	51,282	592,572	138,180,307	19,629,714	14,930,813	172,740,833
FY38	480,680	67,795	53,599	602,074	139,949,986	19,955,390	15,605,282	175,510,659
FY39	486,844	68,926	56,022	611,791	141,744,691	20,288,290	16,310,676	178,343,656
FY40	493,241	70,077	58,555	621,873	143,607,075	20,627,158	17,048,431	181,282,665

Source: Model V

APPENDIX B – PROJECTED RIDERSHIP

Fiscal Year	BART Forecast	Extrapolated	No Project - Constrained	Lower Bound - Unconstrained	Upper Bound - Unconstrained	Most Likely - Unconstrained	Constrained Maximum	Lower Bound - Constrained	Upper Bound - Constrained	Most Likely - Constrained
2018	431,709	-	431,709	-	-	-	-	-	-	-
2019	440,917	-	435,973	-	-	-	-	-	-	-
2020	453,232	-	435,973	-	-	-	-	-	-	-
2021	464,527	-	435,973	-	-	-	-	-	-	-
2022	475,491	-	435,973	-	-	-	-	-	-	-
2023	482,072	-	435,973	-	-	-	-	-	-	-
2024	488,786	-	435,973	-	-	-	-	-	-	-
2025	495,633	-	435,973	-	-	-	-	-	-	-
2026	502,755	-	435,973	-	-	-	-	-	-	-
2027	510,006	-	435,973	520,206	586,507	554,631	638,945	520,206	586,507	554,631
2028	517,169	-	435,973	527,512	594,744	562,421	638,945	527,512	594,744	562,421
2029	524,480	-	435,973	534,970	603,152	570,372	638,945	534,970	603,152	570,372
2030	531,858	-	435,973	542,495	611,636	578,395	638,945	542,495	611,636	578,395
2031	539,903	-	435,973	550,701	620,889	587,145	638,945	550,701	620,889	587,145
2032	548,122	-	435,973	559,084	630,340	596,082	638,945	559,084	630,340	596,082
2033	556,526	-	435,973	567,657	640,005	605,222	638,945	567,657	638,945	605,222
2034	565,177	-	435,973	576,480	649,953	614,630	638,945	576,480	638,945	614,630
2035	574,015	-	435,973	585,495	660,117	624,241	638,945	585,495	638,945	624,241
2036	583,186	-	435,973	594,850	670,664	634,215	638,945	594,850	638,945	634,215
2037	592,572	-	435,973	604,424	681,458	644,422	638,945	604,424	638,945	638,945
2038	602,074	-	435,973	614,115	692,385	654,755	638,945	614,115	638,945	638,945
2039	611,791	-	435,973	624,027	703,560	665,323	638,945	624,027	638,945	638,945
2040	621,873	-	435,973	634,311	715,154	676,287	638,945	634,311	638,945	638,945

Fiscal Year	BART Forecast	Extrapolated	No Project - Constrained	Lower Bound - Unconstrained	Upper Bound - Unconstrained	Most Likely - Unconstrained	Constrained Maximum	Lower Bound - Constrained	Upper Bound - Constrained	Most Likely - Constrained
2041	-	631,914	435,973	644,552	726,701	687,206	638,945	638,945	638,945	638,945
2042	-	642,116	435,973	654,958	738,433	698,301	638,945	638,945	638,945	638,945
2043	-	652,483	435,973	665,533	750,356	709,575	638,945	638,945	638,945	638,945
2044	-	663,018	435,973	676,278	762,470	721,032	638,945	638,945	638,945	638,945
2045	-	673,722	435,973	687,197	774,781	732,673	638,945	638,945	638,945	638,945
2046	-	684,600	435,973	698,292	787,290	744,502	638,945	638,945	638,945	638,945
2047	-	695,653	435,973	709,566	800,001	756,522	638,945	638,945	638,945	638,945
2048	-	706,884	435,973	721,022	812,917	768,737	638,945	638,945	638,945	638,945
2049	-	718,297	435,973	732,663	826,042	781,148	638,945	638,945	638,945	638,945
2050	-	729,894	435,973	744,492	839,378	793,760	638,945	638,945	638,945	638,945
2051	-	741,679	435,973	756,512	852,930	806,575	638,945	638,945	638,945	638,945
2052	-	753,653	435,973	768,726	866,701	819,598	638,945	638,945	638,945	638,945
2053	-	765,821	435,973	781,137	880,694	832,830	638,945	638,945	638,945	638,945
2054	-	778,185	435,973	793,749	894,913	846,277	638,945	638,945	638,945	638,945
2055	-	790,749	435,973	806,564	909,362	859,940	638,945	638,945	638,945	638,945
2056	-	803,516	435,973	819,587	924,044	873,824	638,945	638,945	638,945	638,945
2057	-	816,489	435,973	832,819	938,963	887,932	638,945	638,945	638,945	638,945
2058	-	829,672	435,973	846,265	954,122	902,268	638,945	638,945	638,945	638,945
2059	-	843,067	435,973	859,928	969,527	916,835	638,945	638,945	638,945	638,945
2060	-	856,679	435,973	873,812	985,180	931,638	638,945	638,945	638,945	638,945
2061	-	870,510	435,973	887,920	1,001,086	946,679	638,945	638,945	638,945	638,945
2062	-	884,564	435,973	902,256	1,017,249	961,964	638,945	638,945	638,945	638,945
2063	-	898,846	435,973	916,823	1,033,673	977,495	638,945	638,945	638,945	638,945
2064	-	913,358	435,973	931,625	1,050,362	993,277	638,945	638,945	638,945	638,945
2065	-	928,104	435,973	946,667	1,067,320	1,009,314	638,945	638,945	638,945	638,945

Fiscal Year	BART Forecast	Extrapolated	No Project - Constrained	Lower Bound - Unconstrained	Upper Bound - Unconstrained	Most Likely - Unconstrained	Constrained Maximum	Lower Bound - Constrained	Upper Bound - Constrained	Most Likely - Constrained
2066	-	943,089	435,973	961,951	1,084,552	1,025,609	638,945	638,945	638,945	638,945
2067	-	958,315	435,973	977,482	1,102,063	1,042,168	638,945	638,945	638,945	638,945
2068	-	973,788	435,973	993,263	1,119,856	1,058,994	638,945	638,945	638,945	638,945
2069	-	989,510	435,973	1,009,300	1,137,936	1,076,092	638,945	638,945	638,945	638,945
2070	-	1,005,486	435,973	1,025,595	1,156,308	1,093,466	638,945	638,945	638,945	638,945
2071	-	1,021,719	435,973	1,042,154	1,174,977	1,111,120	638,945	638,945	638,945	638,945
2072	-	1,038,215	435,973	1,058,980	1,193,948	1,129,059	638,945	638,945	638,945	638,945
2073	-	1,054,978	435,973	1,076,077	1,213,224	1,147,288	638,945	638,945	638,945	638,945
2074	-	1,072,011	435,973	1,093,451	1,232,812	1,165,811	638,945	638,945	638,945	638,945
2075	-	1,089,318	435,973	1,111,105	1,252,716	1,184,634	638,945	638,945	638,945	638,945
2076	-	1,106,906	435,973	1,129,044	1,272,942	1,203,760	638,945	638,945	638,945	638,945

Source: WSP

Appendix VI: BART Outreach to Disadvantaged Communities

Appendix VI. Outreach to Disadvantaged and Low Income Communities

Fleet of the Future Final Train Car Model

Project Overview
BART is in the process of replacing its original fleet of rail cars. The new Fleet of the Future will replace all 669 cars in the current fleet and add additional cars to alleviate crowding during peak periods and make more seats available to riders. BART's has already ordered 775 train cars and has plans to grow the fleet to 1,081 cars.

Public Participation Activities
In April and May 2014, BART presented a full-scale model of its proposed new train car design to the public through a series of ten events throughout the Bay Area. BART invited the public to tour the new car and provide feedback by completing a survey form.

BART conducted outreach for the public events using the following methods:

- Creation of an outreach flyer with instructions in four languages on how to request translation services
- BART website announcement and news story
- Multiple BART news alerts to project subscriber list
- Advertisements in local print media including Oakland Post, El Mensajero (Spanish), El Mundo (Spanish), Sing Tao (Chinese), World Journal (Chinese), Korean Times (Korean), Kyocharo Korean News (Korean), and Viet Nam, The Daily News (Vietnamese)
- Announcement on the BART Destination Sign System (DSS) at all BART stations
- Noticing at BART stations through event banners and signage
- BART social media posts
- Email distribution to over 400 CBOs and elected officials in Alameda, Contra Costa, and San Francisco County
- Email and presentations to BART Advisory Committees and Task Force Members
- Two videos posted to BART TV (Youtube)
- Outreach "street teams" located at the station during event hours

Event Locations	Date and Time	Surveys
Justin Herman Plaza (near Embarcadero Station)	Wednesday, April 16, 2014 11:30 am – 7:00 pm	1,254
West Oakland BART Station	Friday, April 18, 2014 2:00 – 7:00 pm	632
Fremont BART Station	Monday, April 21, 2014 2:00 – 7:00 pm	933
Pittsburg/Bay Point BART Station	Wednesday, April 23, 2014 2:00 – 7:00 pm	702
San Francisco Civic Center Plaza (Near Civic Center Station)	Friday, April 25, 2014 11:00 am – 7:00 pm	927

Event Locations	Date and Time	Surveys
North Berkeley BART Station	Tuesday, April 29, 2014 2:00 – 7:00 pm	914
Milpitas/San Jose – Great Mall Main Transit Center	Friday, May 2, 2014 2:00 – 7:00 pm	209
Dublin/Pleasanton BART Station	Monday, May 5, 2014 2:00 – 7:00 pm	591
Fruitvale BART Station	Wednesday, May 7, 2014 2:00 – 7:00 pm	709
Concord BART Station	Friday, May 9 2014 2:00 – 7:00 pm	795
	Total Surveys	7,666

Translated copies of the informational displays and surveys were available in Chinese, Korean, Spanish, and Vietnamese. Spanish translation services were provided for the event at Fruitvale Station.

In all, approximately 17,500 people attended the events and a total of 7,666 surveys were collected. Over 5,000 people also wrote comments on their survey forms. Of the total of 7,666 survey forms completed, 111 were completed in Spanish and 9 were completed in Chinese. No surveys were completed in Vietnamese or Korean.

BART Vision – Future BART

Project Overview

BART Vision - Future BART is an effort to begin mapping out the future of the BART system. BART is now 44 years old, and requires significant system reinvestment to continue to provide high quality service. In addition, the region will change and grow significantly over the next 40 years. This planning effort explored the tradeoffs involved in considering how BART can meet these dual challenges. The BART Vision Plan is about narrowing down the options of projects BART should focus on by determining which ones are most important to the public and fit best into our goals of serving the Bay Area for years to come.

Public Participation Activities

The public was invited to a series of in station events to play an interactive planning and budgetary game on an Ipad tablet. The game outlined three improvement categories participants could select from: Fix and Modernize BART; More Train and Station Capacity; and New Lines & Extensions. Within the three categories participants could choose and prioritize specific projects and the revenue sources to help pay for them. Revenue sources included a bond measure, regional gas tax, higher bridge tolls, and others. The "player" was given a budget and needed to stick to it or select additional funding sources if they wanted to select more projects. The purpose of the exercise was to show participants, in real time, the potential benefits and impacts of different spending decisions and the annual household cost of your selected priorities. Large poster boards were also displayed at each in station event to educate the public on the BART Vision planning process and three improvement categories. Spanish Interpreters also were provided at the Pittsburg/Bay Point Station and Chinese interpreters were provided at Balboa Park and Montgomery Street Stations.

For members of the public not able to attend a station event, the game was available online at www.futurebart.org. During in-station events, BART staff also passed out postcard sized versions of the flyer with the website for the online game.

A total of ten in-station events were held on the following dates between 4 – 7pm.

- Fremont Station - Tuesday, Oct 7, 2014
- Balboa Park Station - Wednesday, Oct 8, 2014
- El Cerrito del Norte Station - Thursday, Oct 9, 2014
- Pittsburg/Bay Point Station – Tuesday, Oct 14, 2014
- Dublin/Pleasanton Station – Wednesday, Oct 15, 2014
- Walnut Creek Station – Thursday, Oct 16, 2014
- 19th Street /Oakland Station – Tuesday, Oct 21, 2014
- Downtown Berkeley Station – Wednesday, Oct 22, 2014
- Richmond Station – Tuesday Oct 28, 2014
- Montgomery Street Station – Thursday, Oct 30, 2014

BART conducted public outreach for the in-station events using the following methods:

- Creation of a meeting notice translated into Chinese and Spanish with translation taglines in Tagalog, Vietnamese, and Korean
- Email notification with flyer to over 480 CBOs and Elected Official database
- BART website announcement and news story
- Email and presentation to BART Advisory Committees and Task Force Members

- Announcement on the BART Destination Sign System (DSS)
- Social media announcements
- In-station signage
- Postcard size flyer with survey link

Over 2,551 survey responses to the game were received by project staff. The feedback received will be used to develop the BART Vision Plan which will help guide the BART Board of Directors and staff when making decisions about the future of BART.

Embarcadero & Montgomery Capacity Implementation Plan and Modernization Study

Project Overview

BART is working to improve the capacity at two of our busiest stations – Embarcadero and Montgomery. While ridership has been growing for several years, BART has performed several studies to develop project concepts to handle the increasing demand. In addition, BART is identifying modernization needs to improve station functionality, safety, access, appearance, and the overall customer experience. Understanding the concerns of stakeholders and BART riders has been central to the planning underway. BART is now developing an implementation and phasing plan to move forward with the most effective near-term improvements as well as potential future projects to accommodate the increasing number of riders and modernize the stations. These efforts are vital to support the continuing growth of the region and its transit network.

Public Participation Activities

BART held a series of in-station open houses to solicit public input. The first open house events were held on October 28, 2014, at Embarcadero Station during the AM and PM commute hours and October 30, 2014, at Montgomery Station also during the AM and PM commute hours. The purpose of the outreach was to inform BART riders and the public about BART's planning process and efforts to implement capacity and modernization efforts at the stations; build awareness and understanding of challenges and potential solutions; identify community issues beyond those that have already been raised or anticipated; and survey riders and the public on preferences for modernization/capacity improvements.

During the four events, BART staff handed out more than 15,000 postcards with project information in three languages (English, Spanish, Chinese) and taglines in Tagalog, Korean and Vietnamese. The postcard included a link to the project webpage and a request to fill out a survey for each station. Hardcopy surveys and drop boxes for surveys were available at each station for at least 24 hours before and after the events. There were large display boards that included information about the overall project and concepts for increasing capacity and modernization improvements at these stations. The display boards and surveys were also available in Spanish and Chinese.

For Embarcadero Station 2,858 survey responses were received and for Montgomery Station 2,042, totaling 4,900 survey responses. In total, eight Chinese language surveys were collected and seven Spanish language surveys.

A second round of in-station open houses at Embarcadero and Montgomery BART stations was held in October 2015. These events focused on the recommended alternative concepts and modernization improvement options. The open houses were held at the Embarcadero Station on October 13, 2015, and at the Montgomery Station on October 14, 2015. Both were held during the morning commute from 7-10 AM in the free areas of the stations. The public had an opportunity to view display boards, laptops depicting pedestrian flow modeling and 3-D illustrations of the recommended concepts, recommended alternative concepts, and modernization options for each station. The display information was also available in Spanish and Chinese. Comments were collected in conversations (on clip boards) and on an unmonitored, large-format easel note pads that allowed anyone to comment on their own.

BART conducted public outreach for the in-station events using the following methods:

- Creation of outreach flyer with instructions in four languages (Chinese, Korean, Spanish and Vietnamese) on how to request translation services
- Email flyer and survey to key stakeholder mailing list including neighborhood organizations, business groups, community based organizations, elected officials, schools, media and members of the Technical Advisory Committee
- Announcements through BART's Destination Sign System
- BART news story and email alert
- Social Media announcements
- Email and presentation to BART Advisory Committees and Task Force Members
- In-station signage (large posters, digital signs, and sandwich boards)
- Postcard size flyer with survey link

Better BART

Project Overview

The Better BART outreach program is an initiative to educate the Bay Area public about BART's 45 year old system and the critical infrastructure investments that it needs. Despite BART's aging infrastructure, the Bay Area economy is relying on BART more than ever as BART experiences record ridership and increased capacity. BART estimates that it requires a 9 billion dollar investment to improve three key components of its infrastructure; 1. The purchase of new rail cars, 2. Modernization of the operation control center and, 3. Expansion of the Hayward Maintenance Facility. BART has identified federal, state and local funding to pay for half of the investments that are needed to upgrade the system.

The goal of the program is to increase public awareness and build a broad coalition of supporters ready to champion public re-investment in the BART system. The coalition included elected officials, businesses, labor, environmental organizations, bicycle advocates, senior and disability advocacy groups, first responders and community based organizations.

Public Participation Activities

In November 2016, Bay Area voters passed Measure RR, a $3.5 billion infrastructure bond to reinvest in BART. As of November 2017, BART has given over 400 presentations to diverse stakeholder groups in the Bay Area to educate the public about its infrastructure needs and to update the public about the bond construction that is taking place. BART has distributed survey questionnaires to all presentation attendees and received over 1500 responses to date.

MTC Plan Bay Area 2040

Project Overview

MTC's Plan Bay Area 2040 is long-range transportation and land use plan mandated by SB375. The region adopted its first regional transportation plan in 2013, which focused on the reduction of greenhouse gas emissions through the promotion of more compact, mixed use residential and commercial development near public transportation. Plan Bay Area 2040 builds upon the goals established in Plan Bay Area and considers how growth will occur throughout the region over the next twenty-four years. BART is as a key stakeholder in Plan Bay Area 2040 participated throughout the multiyear outreach activities led by MTC.

Public Participation Activities

Public participation activities included extensive outreach with local government officials, community based organizations, agency stakeholders, the region's 101 cities and nine counties also participated in the development of the Plan.

Engagement activities include workshops in each county and public hearings on the draft prior to adoption of a final plan. Thousands of people have participated in public open houses and other public meetings, telephone and internet surveys, and more.

Highlights from the effort include:

- 27 open houses in the nine Bay Area counties that drew nearly 1,500 participants over the three rounds of open houses (three open houses per county)
- One statistically valid telephone poll in spring of 2016 that reached out to more than 2,000 Bay Area residents from all nine counties and conducted in English, Spanish and Chinese
- Six public hearings to gather input on the plan's environmental impact report (EIR)
- A regional housing summit attended by some 300 Bay Area public officials, community leaders and interested residents to consider ideas and best practices for alleviating the region's housing affordability crisis
- Ongoing meetings with local elected officials, local planning directors and officials from congestion management and transit agencies as well as staff from environmental protection agencies, including 10 presentations to elected officials on the Draft Plan
- Partnerships with community-based organizations (CBOs) in low-income communities and communities of color that featured presentations by CBO leaders directly to MTC and ABAG decision makers, 168 completed online surveys ranking planning scenarios and five focus groups with 70 residents to discuss the Draft Plan
- An active web presence, including nearly 255,000 page views by 63,000 unique visitors to the PlanBayArea.org and 2040.planbayarea.org websites between July 2014 and July 2017 (60 percent of visitors were new visitors)
- An active social media presence with a total of 28 paid campaigns on Facebook and Twitter
- Online "Build a Better Bay Area" survey taken by some 920 participants helped illustrate policy and fiscal tradeoffs associated with three different future growth and transportation scenarios
- Nine videos produced, posted online explain the planning process and challenge facing the region
- The Plan was discussed at a total of 195 public meetings during its development.

MTC documented its public participation below are highlights from the transportation related feedback collected throughout public participation activities:

- For transportation, people would like to see more transit alternatives (especially BART), as well as extended hours of transit service. They prioritized efforts to ensure reliability and connectivity of the transportation network as well as the infrastructure needed to support bicycling and walking.
- There was strong support for increased BART extensions and increased BART service

MTC Core Capacity Transit Study

Project Overview

MTC's Core Capacity Transit Study is a collaborative effort to improve public transportation to and from the San Francisco core. Five transit operators: BART, Muni, AC Transit, Caltrain, and the Water Emergency Transportation Authority, in coordination with the San Francisco County Transportation Authority (SFCTA) and the Metropolitan Transportation Commission (MTC) have committed to identifying investments and improvements to increase transit capacity to the San Francisco Core. BART's investments include, expansion of its railcar fleet to increase train car length and increased headways, additional storage and maintenance capacity, a new train control system and upgrades to BART's traction power system.

Public Participation Activities

In February 2017, the MTC's Core Capacity Transit Study Project Management Team hosted two public workshops to discuss the study's evaluation criteria and project packages with project stakeholders. The workshops were held at the SPUR offices in San Francisco and Oakland, and between 30 and 50 people attended each event. The purpose of the public meetings was to provide participants an overview of the study background and obtain feedback on short, medium and long-term transit enhancement concepts. Breakout groups allowed participants to share their thoughts on, concerns with, and suggestions for the various evaluation criteria and project packages.

Hayward Maintenance Complex Phase II Noise Study

Project Overview

The HMC project is identified BART's Strategic Maintenance Plan, adopted in 2008, as a priority measure to achieve its goal to expand BART's maintenance and operations capacity in order to accommodate future riders from BART expansions, including to San Jose, East Contra Costa County, Oakland Airport Connector and Livermore. HMC is critical to improving BART's long-term car reliability and passenger service on the BART system.

Public Participation Activities

On October 21, 2010, BART hosted a public meeting to discuss and solicit input from community members regarding the proposed Hayward Maintenance Complex (HMC) project. Community meeting participants had the opportunity to ask questions and provide feedback. During the meeting, participants were asked to sign in and were provided a project brief and other BART informational materials. BART staff briefly reviewed the agenda and meeting purpose, followed by a presentation about the HMC project, which described the project purpose, need, elements, and the environmental analysis and review timeline. Following the presentation meeting attendees participated in discussion and had the opportunity to ask questions and make multiple comments. A graphic recorder took notes and recorded comments and questions on large scale wallgraphic paper.

BART conducted additional outreach for the meetings using the following methods:

- Mailings to residents (4,600) and businesses (600) within one mile of the HMC site
- BART website announcement
- Bay Area Media, both print and online
- "In person" outreach in nearby communities
- Creation of trilingual flyer and mailer in English, Spanish and Tagalog
- Distribution of postcards, flyers and community bulletins through the following local community-based and municipal organizations:

Appendix VII: BART Public Participation Plan

July 8, 2011

Public Participation Plan

San Francisco **Bay Area Rapid Transit**

63452v1

Table of Contents

EXECUTIVE SUMMARY

Introduction

The Public Participation Plan (PPP) is a guide for San Francisco Bay Area Rapid Transit District's (BART) ongoing public participation endeavors. Its purpose is to ensure that BART utilizes effective means of providing information and receiving public input on transportation decisions from low income, minority and limited English proficient (LEP) populations, as required by Title VI of the Civil Rights Act of 1964 and its implementing regulations.

Under federal regulations, transit operators must take reasonable steps to ensure that Limited English Proficient (LEP) persons have meaningful access to their programs and activities. This means that public participation opportunities, normally provided in English, should be accessible to persons who have a limited ability to speak, read, write, or understand English.

In addition to language access measures, other major components of the PPP include: public participation design factors; a range of public participation methods to provide information, to invite participation and/or to seek input; examples to demonstrate how population-appropriate outreach methods can be and were identified and utilized; and performance measures and objectives to ensure accountability and a means for improving over time.

Summary of Findings

In general, PPP development participants requested that BART offer a variety of community meeting formats, from large group discussions to one-on-one interviews. They also are interested in utilizing methods other than community meetings, such as smaller focus groups, surveys, or a telephone line, to provide their input to BART. They further requested that meeting formats be tailored to specific public participation goals. Many participants stated that convenient meeting times and locations, plus amenities such as child care and refreshments during meetings, were helpful in encouraging diverse meeting attendance and participation.

The PPP development process revealed population-specific findings for low income, minority and LEP communities, demonstrating that effective public participation strategies make use of a variety of methods in order to reach the greatest possible diversity of participants. These findings are discussed in detail in Section III, "Public Participation Strategy Design Factors," and Section IV, "Public Participation Methods."

Comments and survey data from the PPP development process are used throughout the document in support of both general and population-specific

findings. Note that these comments and data are based specifically on PPP community meeting and survey participant responses, and are in no way meant to generalize views based on an individual's membership in a protected group. The surveys conducted during the PPP development process were not intended to be statistically valid, but were included as additional support to public input which was primarily received through verbal and written comments.

Summary of Process

In order to engage low income, minority and LEP populations in the development of the PPP, BART conducted two rounds of multi-lingual community meetings (29 total) throughout the BART service area in spring 2010. BART coordinated with community-based organizations (CBOs), offered translation services in 10 languages, and collected more than 1,350 surveys and 750 written comments through evaluation forms and wallgraphic notes recorded during meetings.

BART supplemented the extensive public participation process by conducting informational meetings with CBO stakeholders serving LEP populations in the BART service area. In May 2010, outreach that included telephone interviews and focus group meetings was conducted throughout the BART service area. In the fall of 2010, 19 LEP focus group meetings were conducted and attended by well over 400 LEP persons. The CBOs represented the following language groups: Chinese, Korean, Russian, Spanish, Tagalog and Vietnamese. Finally, an internal BART stakeholders' meeting was convened in May 2011 to review and reflect on internal stakeholders' experience with the PPP.

A database containing contact information for more than 1,000 individuals and more than 400 CBOs was created from outreach, surveys and sign-in sheets at the community meetings held throughout 2010, and will continue to be updated.

The input from these meetings validated the most successful practices that are described in this PPP. It also suggested revisions and enhancements based on lessons learned from the public participation methods conducted over the past year.

I. INTRODUCTION

A. San Francisco Bay Area Rapid Transit District (BART)

BART is a rapid transit system that travels through 26 cities and a four-county service area, including Alameda, Contra Costa, San Francisco and San Mateo counties. BART has 104 miles of track, 44 stations and an average weekday ridership of 360,000 passengers. During peak transbay commute hours, more than 50,000 people ride BART. BART provides discounted fares for seniors, persons with disabilities, students and qualified educational groups. Children ages 4 and under ride free.

BART opened in September 1972 and is governed by a directly-elected nine member Board of Directors serving four year terms.

BART provides a variety of written and oral language assistance services. These are identified in Appendix E: Frequency of Contact with LEP Individuals.

B. Purpose of the Public Participation Plan (PPP)

BART developed the PPP to guide public involvement efforts and enhance access to BART's transportation decision-making process by low income, minority and limited English proficient (LEP) populations. Based on both input collected from these populations regarding effective public involvement and on BART's experiences, the PPP describes the overall goals, guiding principles and appropriate outreach methods that BART could use to reach out to low income, minority and LEP populations.

Pursuant to Federal Transit Administration (FTA) Title VI regulatory guidance, federal funding recipients and subrecipients should seek out and consider the viewpoints of minority, low income and LEP populations "in the course of conducting public outreach and involvement activities." (FTA Circular 4702.1A) This guidance also requires that an agency offer "early and continuous opportunities for the public to be involved in the identification of social, economic and environmental impacts of proposed transportation decisions at BART." To meet these requirements, BART developed the PPP, a document intended as a guide for how BART will deepen and sustain its efforts to engage diverse community members throughout its service area. The PPP also includes example public participation strategies, designed using the PPP goals, principles and methods.

The PPP aims to offer early, continuous and meaningful opportunities for the public to be involved in the identification of social, economic and environmental impacts of proposed transportation decisions at BART. The PPP is intended as a guide for how BART will deepen and sustain its efforts to engage diverse community members throughout its service area. The PPP also includes example public participation strategies, designed using the PPP goals, principles and methods. These examples have proven successful for BART in doing outreach to these populations.

BART may continue to modify its public participation methods over time based on feedback from the low income, minority and LEP populations, including customer and community-based organizations, about the effectiveness and inclusiveness of the PPP. The PPP is intended to be a living document and may be updated periodically to reflect community preferences, changing demographics and transit services, as well as respond to new communication and outreach methods.

C. Process to Develop the PPP

To develop the PPP, BART hosted 22 community meetings throughout the BART service area between March 31, 2010 and April 21, 2010. The meetings were held to determine how BART could best provide information and receive public input on transportation issues from low income, minority and LEP populations.

Based on the feedback received, BART developed a draft PPP. BART mailed the draft PPP to all participants who provided their addresses on the sign-in sheets at the community meetings. The draft PPP was sent to participants in their preferred language, as indicated on the sign-in sheets, and in Braille to participants with visual impairments. BART also distributed the draft PPP to community-based organizations (CBOs) and posted it on the BART website. A printed comment form was included with the draft PPP.

BART conducted a second round of 7 meetings to discuss the draft PPP during the first three weeks of May 2010. The PPP incorporated the feedback and suggestions received during the community meetings, comments received through the website, written comment forms, letters and verbal comments expressed during the BART Board of Directors meeting held on May 13, 2010.

BART supplemented the extensive public participation process by conducting informational meetings with CBO stakeholders serving LEP populations in the BART service area. In May 2010, outreach was conducted that included telephone interviews and focus group meetings conducted throughout the BART service region. In the fall of 2010, 19 LEP focus group meetings were conducted and attended by CBOs serving LEP populations, as well as over 400 LEP persons. The CBOs represented the following language groups: Chinese, Korean, Russian, Spanish, Tagalog and Vietnamese. These six languages were identified as the most prevalent languages in the BART service area. They provided feedback on how to improve language assistance measures at BART, including use of BART fare equipment, safety and security, awareness of current language assistance measures, and improvements to BART's language assistance measures. In April and May 2011, BART conducted outreach to LEP populations to review BART's Language Assistance Plan (LAP) in preparation for inclusion in the PPP. Through each of these efforts, more than 400 people provided feedback on how to improve understanding and increase use of the BART system by persons with limited English proficiency.

Public Participation Survey

In addition, BART distributed a public participation survey at the PPP community meetings and to CBOs in the following languages: Spanish, Chinese, Tagalog, Russian, Korean and Vietnamese, and, in response to community requests for additional languages, in Laotian, Cambodian and Portuguese. The survey was also provided in Braille and posted on the BART website. BART received more than 1,350 responses to the survey. The survey queried participants regarding their preferences for public participation processes.

BART hired a consulting firm, MIG, Inc., a planning, design and communications firm in Berkeley, California, to assist with the development of the PPP. During development of the PPP, MIG staff served as neutral, third-party facilitators and recorded comments expressed at the community meetings. MIG transcribed and compiled the comments submitted in writing, tallied the meeting evaluation responses and transcribed participant contact information from the meeting sign-in sheets. MIG also assisted BART with the development of the PPP survey.

MIG provided an objective review of the findings from the meetings, comment cards and surveys; these findings and analysis were used to develop this PPP. MIG has compiled a PPP Development Summary Report on the Plan development outreach process, which includes the following appendices: a database of all public comments submitted; a tally and analysis of meeting evaluation responses; and a tally and analysis of survey responses.

Responses to surveys were tallied and analyzed by calculating the percentage of respondents who gave each possible multiple-choice answer. This analysis was performed both on overall data and on data from low income, minority and LEP respondents in order to determine where the preferences of those populations differed from or matched the overall results.

The surveys also included space for respondents to identify alternatives to the options given, as well as make general comments on the public participation process. Comments submitted in writing as well as graphic recordings of comments made during the meetings were compiled into a database. The comments were tracked by meeting location, source (whether from an online or print survey, comment card or meeting wallgraphic) and preferred language. Comments were categorized by both major themes and sub-themes developed with reference to meeting agendas and questions asked on the surveys. An example survey from the PPP development process is included as Appendix L.

Target Audience Identification

BART determined geographical areas where meetings would be held through a mapping analysis of Bay Area communities based on income and race. Using the results of the mapping, BART identified and contacted CBOs located in BART's four service

areas to determine their interest in assisting with outreach to these residents. The CBOs that BART contacted serve a broad range of community interests.

Community-Based Organizations

CBOs played an important role in the development of the PPP. BART worked with a variety of CBOs, including: ethnic cultural centers; churches and faith-based organizations; geographic-specific such as tenant associations; neighborhood and community groups; civic groups; business organizations; educational facilities including schools providing English as a Second Language programs; service providers for children, youth, families and persons with disabilities; recreation; environmental; political; youth- and senior-oriented organizations; and many others. Many CBOs were receptive to BART's request for assistance and BART staff worked closely with the CBOs to schedule and conduct outreach for the PPP meetings. The CBOs assisted BART by selecting meeting venues, recommending languages for translation and interpretive services, providing refreshments and childcare assistance, and helping to publicize the meeting and recruit participants. BART arranged and supplied staff support, interpreters, meeting materials, supplies and equipment for all of the meetings. The contacts and relationships established through the meeting planning process helped to renew and expand some of the partnerships BART had in place and provide a good foundation to implement the PPP over time. A comprehensive list of these CBOs can be found in Appendix B: BART Community-Based Organization Partners.

*Notification Methods for PPP Community Meetings**

- CBO Newsletters
- CBO Mailing Lists
- Direct Mail
- Ethnic Media
- Paid Advertisement
- Flyer Distribution to CBOs
- Flyer Distribution at BART Stations
- Flyer Distribution on BART Car Seats
- Posting on the BART website (www.bart.gov)
- Offices of city and county elected officials

Translation Services

Translated materials and interpretive services were available for every PPP community meeting in the nine languages already identified above under "Public Participation Survey," plus Braille. Written comments received in these languages were translated after the meetings and were included in the comments database (included as an appendix to the PPP Development Summary Report).

The PPP reflects participant preferences for how BART should invite, listen to and respond to all residents when making decisions that will affect them. The PPP identifies a menu of public participation methods to consult in the future. The plan and menu of methods was developed based on a review and analysis of comments expressed orally during the 29 community meetings, more than 750 written comments submitted on comment cards or evaluation forms and expressed during the meetings, and the results of more than 1,350 surveys.

The PPP also draws on the LAP. As part of the LAP development, the importance of BART services to persons with limited English proficiency was evaluated. LAP outreach activity findings highlight opportunities, challenges and access needs for public participation from and public outreach to LEP populations. One of the common themes that emerged from interviews conducted with CBOs and focus groups was that LEP community members were often unaware of BART's public participation due to the lack of translated information.

D. Low Income, Minority and LEP Population in BART Service Areas

BART periodically identifies the number and proportion of low income, minority and LEP population distribution in the four-county region that BART serves. BART uses the following thresholds to identify census tracts in the service area that are predominantly minority, low income and LEP:

- Low income: Using 2000 U.S. Census data, low income is defined as less than 200 percent of the federal poverty level.[1] The 200 percent threshold was used to account for the high cost of living in the Bay Area compared to the rest of the country. The 200 percent threshold is also consistent with the assumptions employed by the Metropolitan Transportation Commission in its February 2009 Equity Analysis Report. The percentage of low income population within BART's four county service area was determined to be 21.6 percent.
- Minority: Using the year 2000 Census data, 52.7 percent of the total population living within the BART service area are minority. This includes persons who self-identified as Black or African American, Asian or Pacific Islander, Native American or Alaska Native, Hispanic or Latino, and those persons who identified themselves as some other race or two or more races.
- Limited English Proficient (LEP): are persons for whom English is not their primary language and who have a limited ability to speak, understand, read, or write English. This definition includes people who reported to the U.S. Census that they do not speak English well or do not speak English at all. BART's analysis of 2000 U.S. Census data showed that LEP populations represent 18.6 percent of the total BART service area. Of the LEP populations, the largest

[1] As a reference, for a single person household, 200% of the federal poverty level in 2008 was $21,982. For a two-adult, two-child household, the 200% threshold was $43,668. (Note that the data mapped are based on 2000 Census data as these are the only such data available at the tract level.)

groups are Spanish-speaking (43%), Chinese-speaking (27%), Vietnamese-speaking (4%), Russian-speaking (2%), and Korean-speaking (2%).

The methodology for low income and minority population identification is included in Appendix J: Minority and Low Income BART Service Area Census Tracts.

Appendix H: Service Area Maps illustrates the location as of 2010 of the following populations in the BART service area:

- Minority populations predominantly;
- Low income populations predominantly;
- LEP populations who do not speak English or do not speak English at all;
- Spanish-speaking LEP populations;
- Chinese-speaking LEP populations;
- Vietnamese-speaking LEP populations; and
- Korean-speaking LEP populations.

Low Income Population by Home-Origin BART Station

The number and proportion of low income populations by home-origin BART station were assessed for BART's 2008 Station Profile Study. The table below illustrates the home-origin BART stations with the largest percentage of low income customers.* Data is based on weekday usage.

Home-Origin BART Station	% of Low Income Customers*
Powell St	45%
Balboa Park	38%
Richmond	37%
Coliseum / Oakland Airport	37%
Downtown Berkeley	37%
Civic Center	36%
12th St / Oakland City Center	34%
19th St / Oakland	31%
Lake Merritt	31%
Ashby	30%
MacArthur	29%
Fruitvale	28%
Hayward	27%
El Cerrito del Norte	26%
Pittsburg/ Bay Point	26%
Bay Fair	25%

Home-Origin BART Station	% of Low Income Customers*
San Leandro	24%
16th St Mission	24%
24th St Mission	23%
Colma	23%
Daly City	22%
South Hayward	22%

** Note: In this table, "low income" includes those with annual household incomes under $25,000 (regardless of household size) and those with annual household incomes of $25,000 - $49,999 with household sizes of two or more people. In certain cases, this may be a broader definition than the threshold described in Section D (200% of the federal poverty level) where low income is defined as $44,700 for a household size of 4.*

Minority Population by Home-Origin BART Station

The number and proportion of minority populations by home-origin BART station were assessed for BART's 2008 Station Area Profile Study. The table below identifies the 17 home-origin BART stations with the largest percentage of minority customers.* Data is based on weekday usage.

Home-Origin BART Station	% of Minority Customers*
Coliseum / Oakland Airport	82%
South Hayward	79%
Union City	78%
Balboa Park	77%
Richmond	74%
Pittsburg/Bay Point	73%
South San Francisco	73%
Hayward	71%
Fremont	70%
Colma	68%
El Cerrito del Norte	68%
Daly City	67%
Bay Fair	67%
12th Street/Oakland City Center	66%
San Leandro	65%
San Bruno	59%

Home-Origin BART Station	% of Minority Customers*
Lake Merritt	57%

** Note: BART's 2008 Station Area Profile identified 56 percent of the population in its service area as non-white based on U.S. Census Bureau 2006 to 2008 American Community Survey (ACS) 3-Year Sample data.*

Limited-English Proficient Population within BART Service Area

The number and proportion of persons with limited English-speaking proficiency and their language characteristics likely to be encountered within BART's four-county service area were assessed for the LAP. Both the U.S. Census and ACS data sources identify the top six languages spoken by LEP persons in the BART service area as the following: Spanish, Chinese (Cantonese and Mandarin), Vietnamese, Tagalog, Russian and Korean.

Primary Languages Spoken in the BART Service Area, Census 2000		
Language	Population Speaking Non-English Languages	Percent of Total Population
Spanish	517,983	14.24
Chinese	282,398	7.76
Tagalog	141,341	3.88
Vietnamese	37,785	1.04
Russian	28,993	0.80
All Other Languages	332,738	9.14
Total Speaking Non-English Languages	**1,341,238**	**36.86**

Source: U.S. Census Bureau, Summary File 3 (SF 3), 2000, Table PCT.10

F. Definitions

To ensure consistent use of terminology in the PPP, the following definitions are provided.

- *Community Partners:* Any organization or group that desires to work with BART to help facilitate participation by their members in a BART-sponsored participation strategy method. Community partners are also stakeholders and play a critical role in helping to reach target audiences.

- *Language Assistance Plan (LAP):* A tailored plan that describes BART's self assessment which identifies appropriate language assistance measures needed to improve access to BART services and benefits from limited English proficient persons.

- *Limited English Proficient (LEP) population:* Those persons who reported to the U.S. Census Bureau that they do not speak English well or who do not speak English at all.

- *Outreach:* An effort by individuals in an organization or group to share its ideas or practices, to educate or inform, and to engage and seek input from other organizations, groups, specific audiences or the general public.

- *Outreach Methods:* Methods that identify and invite target audiences and stakeholders to participate in a public participation opportunity.

- *Public Information:* A one-way communication from BART to the public with the goal of providing clear and objective information about a policy, project, program or activity.

- *Public Input:* Participation methods that seek community feedback on a policy, project, program or activity. A response is required from the public.

- *Public Participation:* Any process that seeks to inform, collect input from or involve the public in decision-making processes. Public participation is an umbrella term that describes methods including: public information, education, outreach, input, involvement, collaboration and engagement, and communication from the public to BART.

- *Public Participation Plan (PPP):* A tailored plan that describes how BART may undertake public involvement, information, education, participation and/or outreach methods.

- *Public Participation Strategy:* A specific program of participation methods tailored to meet the participation needs and preferences of a specific geographic area or cultural group. The public participation strategy is informed by BART's overall PPP, as defined above, but is adapted for that geographic area, specific group and/or issue at hand.

- *Public Relations:* The dissemination of information to the media and the public with an emphasis on the promotion of a particular policy, program, project or activity.

- *Target Audience and Participants:* Low income, minority and Limited English Proficiency (LEP) populations.

- *Government and Community Relations (GCR):* BART's Government and Community Relations Department serves as a direct liaison to the community and local, state and federal elected officials and their staff representing the San Francisco Bay Area on all issues related to BART.

- *Office of Civil Rights (OCR):* BART's Office of Civil Rights oversees and monitors BART's Civil Rights compliance ensuring all BART policies, practices and procedures are free from discrimination, harassment and retaliation and to coordinate BART's Title VI compliance.

II. GOALS AND GUIDING PRINCIPLES

A. Goals

The PPP endeavors to offer meaningful opportunities for the public, including low income, minority and limited English proficient populations, to be involved in the identification of social, economic, and environmental impacts of proposed transportation decisions at BART.

Specific goals and outcomes include:

- Quality Input and Participation
  Comments received by BART are useful, relevant and constructive, contributing to better plans, projects, strategies and decisions.

- Consistent Commitment
  BART communicates regularly, develops trust with communities and builds community capacity to provide public input.

- Diversity
  Participants represent a range of socioeconomic, ethnic and cultural perspectives, with representative participants including residents from low income neighborhoods, ethnic communities and residents with limited English proficiency.

- Accessibility
  Every effort is made to ensure that opportunities to participate are physically, geographically, temporally, linguistically and culturally accessible.

- Relevance
  Issues are framed in such a way that the significance and potential effect is understood by participants.

- Participant Satisfaction
  People who take the time to participate feel it is worth the effort to join the discussion and provide feedback.

- Clarity in Potential for Influence
  The process clearly identifies and communicates where and how participants can have influence and direct impact on decision-making.

- Partnerships
  BART develops and maintains partnerships with communities through the methods described in the PPP.

B. Guiding Principles

Effective public participation should be based on the following principles:

- Flexible
  The engagement process should accommodate participation in a variety of ways and be adjusted as needed.

- Inclusive
  BART should proactively reach out and engage low income, minority and LEP populations from the BART service area so these groups will have an opportunity to participate.

- Respectful
  All feedback received should be given careful and respectful consideration.

- Tailored
  BART's public participation methods should be tailored to match local and cultural preferences as much as possible.

- Proactive and Timely
  Participation methods should allow for early involvement and be ongoing and proactive so participants can influence BART's decisions.

- Clear, Focused and Understandable
  Participation methods should have a clear purpose and use for the input, and should be described in language that is easy to understand.

- Trustworthy
  Information provided should be accurate and trustworthy.

- Responsive
  BART should strive to respond and incorporate appropriate public comments into transportation decisions.

- Transparent in Impact
  BART should communicate the results of the public's input in terms of the impact on decisions at a broad summary level, providing the major themes, the decisions reached and rationale for the decisions.

- Authentic and Meaningful
  BART should support public participation as a dynamic and meaningful activity that requires teamwork and commitment at all levels of the organization.

III. PUBLIC PARTICIPATION STRATEGY DESIGN FACTORS

A. Introduction

The following factors will guide BART in designing an appropriate public participation strategy and determining which methods should be employed in relation to transportation decisions which include major service changes, fare changes or construction projects. Strategies should be scaled in intensity, duration, number and frequency of methods used, with consideration of the following:

- Scale of plan or project (region-wide, county level, neighborhood level)
- Level of potential impact
- Cost of potential decision for BART, taxpayers and customers

The PPP includes methods that are tailored to achieve participation from specific geographic areas or communities and are culturally sensitive and inclusive of low income, minority and LEP populations. FTA guidelines provide BART "wide latitude to determine how, when and how often specific public involvement measures should take place, and what specific measures are most appropriate. Recipients [of federal funds] should make these determinations based on the composition of the population affected by the recipient's action, the type of public involvement process planned by the recipient, and the resources available to the agency."

Project-specific public participation strategy development will take the following into consideration: target populations and needs, partnerships with CBOs, and translation and interpretive services.

B. Target Populations and Needs

To reach low income, minority and LEP populations within BART's service area, a geographically focused public participation strategy will be needed to achieve the desired participation outcomes. BART staff will work with community partners and stakeholders to identify the most effective methods to support participation within a particular area or cultural group. For example, during the PPP development process, participants suggested specific meeting locations, meeting times, community-based organizations and media outlets that work best in their particular area. One community member illustrated the importance of tailoring each public participation strategy specifically to the project and community, asserting "in reaching out to minority and limited English language populations, you have to meet them where they are…to gather and communicate in the way that these various communities are accustomed to doing so. This may mean by unconventional methods."

Public participation outreach methods and strategies will likely vary depending on the nature and location of the project. For example, participants in PPP development

activities suggested a number of public participation methods other than traditional community meetings, such as: walking tours of specific stations conducted by BART Directors or staff; development of a "roadshow" with representatives staffing tables at community events such as fairs and festivals and locations such as malls, local supermarkets and BART parking lots; making suggestion boxes or comment cards, surveys on kiosks, or even a BART representative available at stations in order to gather feedback; surveying riders on BART regarding their needs; and sending representatives to city council and other regularly-scheduled community governmental meetings on a regular basis.

C. Partnerships with Community-Based Organizations (CBOs)

Based on past experience, BART finds that strong partnerships result in more participation, better meeting locations and better meetings overall. The CBOs provide a bridge between BART and the community, which helps to build and deepen trust. For example, the Lao Family Development Center in central East Oakland hosted a PPP meeting with BART and their locally-elected representative from the BART Board. The Center's outreach methods helped attract over 200 center members to participate in a community meeting.

CBOs can be helpful in clarifying the best outreach strategies for their constituent community. For example, Russian American Community Services noted that their Russian community members tend to have internet access and prefer to receive information online.

CBOs that serve persons from multi-lingual/multi-cultural groups have been helpful in hosting meetings that ensure participation by low income, minority and LEP populations. Methods at these locations can be both targeted and open to the public. The Native American Intertribal Friendship House located in Oakland is an example of one such location.

BART will continue to communicate with partner CBOs and take advantage of CBOs' ability to support BART public participation methods. However, care should be taken to consider the most strategic and targeted use of CBOs' resources so as to avoid placing an undue burden on the same organizations.

D. Translation and Interpretive Services

BART staff will work with CBOs to identify the specific language services that community members may expect to be provided. When BART is hosting public meetings in a particular geographic area with a known, significant LEP population, the following should be done:

1. Meeting notices should be produced and distributed according to the language translation threshold in the LAP[2], encouraging community members to participate. In addition, participants can request interpreter services 48 hours in advance of the meeting, if needed; and
2. BART will provide at least one qualified interpreter at these meetings who is fluent in the designated LEP language(s).

PPP Survey Results and Community Input

Community input in the form of comments received during the PPP process indicated that LEP PPP development participants support translation and interpretive services when possible to encourage their participation in BART-related public participation methods. PPP development survey results indicated the following population-specific findings regarding translation and interpretive services:

- More than 50% of PPP survey respondents were LEP. Among LEP survey respondents, some LEP language groups had stronger preferences for the presence of an interpreter at meetings than other language groups:
  - 63% of 193 Spanish-speaking PPP survey respondents
  - 69% of 67 Chinese-speaking PPP survey respondents
  - 77% of 320 Vietnamese-speaking PPP survey respondents
- 56% of 193 Spanish-speaking PPP survey respondents preferred having translated written material available at community meetings.

Targeted translation and interpretive services outlined in the LAP inform the PPP's targeted public participation methods. LAP translations and interpretation requirements and services are described at length in the LAP.

Vital Documents

BART will take reasonable steps to ensure that LEP persons receive the language assistance services necessary by translating "vital" written materials into the Language Translation Threshold in the LAP.

Vital documents are defined either as (1) any document that is critical for obtaining services and benefits, and/or (2) any document that is required by law. The "vital" nature of a document depends on the importance of the information or service involved, particularly the consequence to the LEP person if the information is neither accurate nor timely.

The designation of a document as "vital" may not mean that a word-for-word translation of that document will be required. In some cases, a vital document may be

[2] The language translation threshold consists of a minimum of four languages (Chinese, Spanish, Vietnamese and Korean), with the possibility of up to twenty-two additional languages, depending on the circumstances (the "Language Translation Threshold").

translated by providing a summary of the key information in the document. In other cases, notice of the availability of language assistance services may be sufficient.

IV. PUBLIC PARTICIPATION METHODS

A. Introduction

BART will be successful in reaching out to low income, minority and LEP populations by utilizing a variety of methods to provide information, invite participation and seek input. Regardless of the method, BART will select the most appropriate and feasible methods to support each public participation activity from the methods suggested by participants in the process of developing the PPP and determined by the LAP. Care should be taken to ensure that the selected methods are implemented in a manner that specifically targets the participation of low income, minority and LEP populations as well as the general public. It should also be noted that there is no "golden rule" as far as the preferences of any given population are concerned, so circumstances influencing participants affected by a particular project, as well as other factors such as geographic location, need to be considered.

B. Methods Suggested by Target Populations

I. Methods and Considerations for Enhancing Participation from Low Income Populations

The majority of PPP survey respondents were identified as low income, with an annual household income (before taxes) of less than $40,000. Of 1,140 respondents who answered the question regarding income, 890, or 78% of all respondents, were low income. In addition, input from CBOs serving low income populations was also solicited at focus group meetings held in April 2010. Following is a summary of methods suggested by CBOs or low income participants for enhancing participation from low income populations.

1a. Meeting Considerations

Focus group and survey respondents suggested that meeting organizers carefully consider meeting location and time in order to enhance participation from low income communities. Many low income participants were concerned with transportation to and from BART meetings. Some participants asked that BART "coordinate meeting times with transit schedules," ensuring that evening meetings occur "before the last bus" leaves. The vast majority of low income PPP survey respondents (65% or 488 respondents) also indicated a preference for weekend meetings over weeknight evenings or during business hours. Other participants asked that meetings be held in accessible meeting locations, near or even at a BART station, or that free transportation from BART to/from a meeting location be offered. One participant explained that many "can't budget the extra trips." Another participant also suggested that BART consider "pay[ing] for focus groups," offering some compensation to public participants who provide feedback on BART decisions. Finally, a few meeting participants asked that meeting organizers carefully consider the safety of a meeting location, requesting that meetings be located in an area considered "safe for all of us."

Another significant group of comments related to meeting amenities. Refreshments and childcare were ranked as among the top considerations that most low income respondents identified as "very important" or "somewhat important" in their decision to attend a meeting.

1b. Methods for Publicizing Participation Opportunities

Both low income meeting participants and survey respondents suggested that publicity at BART stations or trains would be one of the more effective methods for publicizing participation opportunities to low income populations. Survey respondents also suggested direct mail as an effective method. At a focus group meeting hosted by BOSS (Building Opportunities for Self-Sufficiency), an organization that serves low income populations, advocates from BOSS and other CBOs noted that BART seat drops were one of the more effective outreach methods. Other effective notification methods that were cited included flyers at turnstiles and advertisements on BART trains. Many participants also suggested that BART consider publicizing opportunities on local buses or at local bus stops.

Also, like most survey respondents, low income respondents ranked receiving information on public participation opportunities via "postcard or letter in the mail" as the preferred notification method (when compared to newspaper ads, announcements made through a CBO, BART's website, email, or telephone). However, if meetings were to be publicized through newspapers, low income participants suggested that BART use free neighborhood weekly newspapers because many consider them to be the best source of information and events in local areas. Finally, some CBOs suggested that BART publicize participation opportunities through social service agencies that serve low income populations. For example, BART could explore adding publicity to the monthly rent notices sent out by local housing agencies. A large number of PPP survey respondents (65% of 756 respondents) also indicated involvement with religiously-affiliated CBOs, as contrasted with 5%-13% indicating involvement with other types of CBOs. They also suggested CBOs that specifically serve low income communities. Therefore, these organizations may be helpful in suggesting effective outreach methods for any low income communities they may serve.

1c. Other Considerations

Many of the survey respondents among PPP development participants who were identified as low income also identified themselves as LEP. Among PPP survey respondents, the majority (78%) of low income participants were also LEP, and 84% ranked the availability of translation services as "very important" or "somewhat important" factors in their decision to attend a meeting. Because of this, public participation methods targeted towards low income populations may also need to consider the translation/interpretation needs of LEP populations. Also, a number of low income and/or LEP participants were illiterate and depended on CBOs to help them learn about topics and issues of interest, as well as to help them fill out sign-in sheets

and surveys at meetings, so methods targeted toward both these populations may need to take this into consideration as well.

II. Methods and Considerations for Enhancing Participation from LEP Populations

Well over half of PPP survey respondents were identified as LEP. Of 1,227 respondents who answered the question regarding the language they prefer to communicate in, 774, or 63% of all respondents, were LEP. In addition, input from CBOs serving LEP populations was also solicited at focus group meetings held in April 2010. The availability of interpreters at meetings and translated outreach materials is crucial to enhancing participation from LEP populations. Following is a summary of additional methods suggested by CBOs or LEP participants.

2a. Meeting Considerations

As with low income participants, focus group and survey respondents suggested that meeting organizers carefully consider meeting location, time and accessibility in order to enhance participation from LEP communities. However, since many LEP participants are not low income, they had additional suggestions as well. Some LEP participants echoed the same concerns with convenient transportation to and from BART meetings that were voiced by low income participants. Others clearly had their own transportation, but asked that meeting locations have "better parking." In addition, several LEP participants suggested that meetings have a live online video feed so that those who cannot conveniently travel to the meeting location could still participate.

Preferences for meeting time varied between different LEP populations. While Vietnamese (94% of 401) and Chinese (56% of 66) PPP survey respondents indicated a preference for weekend meetings over weeknight evenings or during business hours, Spanish PPP survey respondents (61% of 188 respondents) preferred weeknight evenings. This suggests that preferences for meeting time may be influenced by income and other factors in addition to the language spoken. Therefore, outreach efforts targeted toward LEP populations need to clarify the preferences of the specific group.

As with low income PPP survey respondents, refreshments and childcare were ranked as among the top considerations that most LEP respondents identified as "very important" or "somewhat important" in their decision to attend a meeting.

2b. Methods for Publicizing Participation Opportunities

LEP meeting participants and survey respondents, like low income participants, also suggested that publicity at BART stations or trains would be one of the more effective methods for publicizing participation opportunities to LEP populations.

LEP survey respondents also ranked receiving information on public participation opportunities via "postcard or letter in the mail" as the preferred notification method. However, LEP participants were also much more likely to suggest using ethnic media

sources and online notices to publicize meetings. Since a number of LEP meeting participants were illiterate, outreach methods that do not depend on reading, such as announcements on ethnic TV or radio stations or through CBOs, may be considered. At a meeting hosted by the Lao Family Development Center in central East Oakland, several participants suggested that phone calls in Nepalese would be most effective.

Like low income survey respondents, a much larger number of PPP survey respondents indicated involvement with religiously-affiliated CBOs rather than with other types of CBOs. They also suggested CBOs serving particular neighborhoods with a high population of LEP persons. Therefore, these organizations may be helpful in suggesting effective outreach methods for any LEP communities they may serve.

III. Methods and Considerations for Enhancing Participation from Minority Populations

The majority of meeting participants and PPP survey respondents were low income and/or LEP, but there was also significant participation from minority community members who were English-speaking and came from a variety of economic situations. At most of the focus group meetings where minority populations were predominant, including meetings in Richmond, in the San Francisco Tenderloin, at Pittsburg High School, and at the San Leandro Library, participants recommended ethnic media as one of the best methods to reach out to the public. In addition, minority participants and survey respondents suggested doing outreach at community events and through neighborhood notices, such as postings on store windows. Many participants also stressed the importance of developing a long-term relationship with community organizations that serve minorities. Some suggested that developing a community advisory committee would be the most effective means of creating such a relationship. This theme was emphasized in meetings at the South Berkeley Senior Center and the El Cerrito Community Center, in the San Francisco Mission District, and in West Oakland.

Minority PPP survey respondents had a much greater likelihood of being involved in a variety of types of CBOs including political, environmental, regional or urban planning as well as religiously-affiliated CBOs. In addition to those specifically serving minorities, the most common factor was geographic. CBOs suggested by minority meeting participants often served a particular neighborhood or region with a large minority population.

C. Menu of Public Participation Methods

The following menu of methods includes those used to inform (Public Information), reach out and invite participation (Outreach), and those to seek input (Public Input). The menu identifies how each method could best be used and is based on input collected from the community and BART staff experience. The methods are not listed in priority order, and are summarized in a matrix on page 35.

Population-specific findings from surveys conducted during the PPP development process are excerpted throughout this section; the complete data can be found in Appendix A: Population-Specific Findings from PPP Development Process Surveys. In analyzing these findings, the following definitions were used to determine low income, minority or LEP status:

- PPP survey respondents were considered to be low income if they replied to the question, "What is the total annual income of your household before taxes?" by indicating that they have an annual household income (before taxes) of less than $25,000.
- PPP survey respondents were considered to be minority if they responded to the question "What is your race or ethnic identification?" by indicating any race or ethnic identifications other than "White."
- PPP survey respondents were considered to be LEP if they responded to the question, "In which language do you prefer to communicate?" by indicating any language other than English.

1. Printed Materials Produced by BART

(Public information and outreach)

Outreach information can be publicized in print materials produced by BART such as newsletters, flyers and posters. BART newsletters include the monthly BART Times and the quarterly Fleet of the Future newsletter. BART flyers include periodic one-page Passenger Bulletins distributed at fare gates and in trains. Per the LAP, vital information in printed materials must be translated into Spanish, Chinese, Vietnamese and Korean and, potentially, into additional languages as needed. If all information cannot be translated, notices could offer translated tags, describing where to obtain translation/interpretations. LEP survey participants indicated in significant percentages a preference for translated information.

Many participants noted that the most effective notification method is the distribution of flyers/notices on or at BART trains and stations. Based on its experience, BART has also found that notices and flyers can also be effectively distributed through community partners.

PPP Community Input – Printed Materials Produced by BART

A PPP development participant emphasized the effectiveness of flyers to reach communities: "Too many of these questions assume the people who [they] are trying to reach can use the Internet. Most do not. They even have a hard time seeing a newspaper. Use TV and flyers." Community members recommended locations such as the bulletin board at local branch libraries, YMCAs, supermarkets and coffee shops.

2. Printed Materials Produced by Other Organizations

(Public information and outreach)

Coordinating with community partners can be cost-effective and can help partner organizations provide information that is of interest to the groups they represent. Information can be publicized in local and regional community newsletters, church bulletins, flyers and other publications.

2a. Local Service Providers

Local service providers regularly communicate with community members through their newsletters to provide information about local services and activities of interest. For example, Housing Authorities communicate regularly with the community they serve through rent notices. Other service providers identified by community members included: emergency food and housing centers, daytime drop-in service providers, food banks, travelers' aid groups, veterans organizations and drop-in service providers.

2b. Local Schools, Community Colleges and Universities

BART may be able to reach parents of school children by coordinating with local schools. Notices and flyers can be provided to the school, with students taking the notices home to their parents. BART may also provide translated materials as recommended by school officials. Community members who were parents or guardians of school-age children identified this as an effective method for getting information to them. Community members also suggested local universities and community colleges in order to get information to college-age students and their families.

3. BART Website

(Public information, outreach and public input)

The BART website, www.bart.gov, is a communications tool that provides substantial information about BART policies, strategies, plans and methods. BART's website offers the BART Rider Guide translated into Chinese, Spanish, Japanese, Korean, German, French and Italian (http://www.bart.gov/guide/index.aspx). BART also uses social networking applications such as Facebook and Twitter.

It should be noted that many community members have cell phones that can receive text messages, but not necessarily smart phones with internet service. Text messages may be a more effective means of sharing BART information than smart phone applications.

Many community members are not aware of the volume of information available on the BART website. Informing community members of what is available on the website is an important element of public outreach, especially outreach to LEP populations.

There were many comments from participants requesting more translated information on the BART website; for example, one Chinese-speaking LEP participant requested that BART "email in Chinese" or "use the web" because "30-40% of [LEP Chinese] use

the web. However, there was also a large number of low income, minority and LEP participants and survey respondents who do not have convenient access to the internet. Therefore BART should ensure that information and participation methods available on the website are available in alternative locations and formats so that users without access to or who prefer not to use the internet can participate. CBOs can be helpful in identifying their constituent communities' communications preferences.

4. Webcast Meetings

(Public information, outreach and public input)

BART, in venues with high-speed web-access, can webcast meetings and public participation methods to allow remote viewing and participation. Informational materials and videos can be posted online for advance review. Webcast meetings may include opportunities for web participants to ask questions or make comments through email or other web-based applications. BART currently webcasts BART Board meetings in English and is exploring the webcasting of meetings in multiple languages.

5. Postcards and Letters Distributed by Mail

(Public information, outreach and public input)

Participation methods can be publicized by letter or postcard distributed by mail. While it is costly for BART to contact all interested persons by mail (regardless of their communications preference), it can be the most effective method for reaching a specific geographic area or population group. For example, sending a postcard in English, Spanish, Chinese, Vietnamese and/or Korean to promote a participation activity may be an effective and cost efficient manner to reach members of a specific community who may be directly impacted by a specific activity.

PPP Survey Results and Community Input – Postcards and Letters Distributed by Mail

Comments made by community members throughout the PPP development process emphasized the effectiveness of direct mailings to publicize participation opportunities. Survey results received during the PPP process indicated population-specific findings regarding the use of postcards and letters distributed by mail to publicize participation opportunities.

- Receiving a postcard or letter by mail was by far the most popular method for publicizing participation opportunities among low income, LEP and minority PPP survey respondents, as follows:
    - 54% of 727 low income PPP survey respondents
    - 44% of 98 American Indian or Native PPP survey respondents
    - 61% of 551 Asian or Pacific Islander PPP survey respondents
    - 39% of 222 Spanish, Hispanic or Latino PPP survey respondents
    - 43% of 187 Spanish-speaking PPP survey respondents
    - 59% of 66 Chinese-speaking PPP survey respondents
    - 64% of 410 Vietnamese-speaking PPP survey respondents

- Although this represents less than a majority (50% or more) of respondents in several cases, that was more than twice the number of those who preferred any of the other options given.
- Black/African American PPP survey respondents preferred receiving emails to other methods. Although only 41% of 59 respondents chose receiving emails as their preference, that was more than twice the number of those who preferred any of the other options given.

6. Station Information Resources

(Public information and outreach)

Many community members expect BART stations to provide information about BART public participation methods, beyond basic fare and schedule information. Using station information resources allows BART users to stay up to date on BART public participation methods while they wait for their train. Providing this information in multiple languages assists those with limited English proficiency. BART currently provides multilingual brochures in Spanish, Chinese, Vietnamese and Korean on such subjects as safety guidelines and evacuation procedures.

Information resources located in BART stations that are used to communicate schedule and service information can be used to conduct outreach. The Destination Sign System (also referred to by community members as electronic information signs) can provide important information combined with train and other community announcements. BART newsletters, bulletin boards, information kiosks and other information stations should also be used to promote participation opportunities.

7. Media Targeted to Ethnic Communities

(Public information and outreach)

Participation opportunities can be publicized through radio, television and newspapers that serve both English speaking and language-specific audiences, including Spanish, Chinese, Vietnamese and Korean.

Some local news or radio shows and local publications, such as free neighborhood weekly papers, are considered to be good sources of information and events in the immediate area. BART should tailor its message to the appropriate audience and remind participants that they can contact BART and receive information in their preferred language. BART should continue outreach to numerous media outlets in the Bay Area that are targeted or appeal to ethnic communities. A listing of media outlets is attached as Appendix C: BART Media Outlets.

PPP Survey Results and Community Input – Media Targeted to Ethnic Communities

Survey results and community input received during the PPP process indicate that the majority of minority and LEP community members are likely to learn about BART-related methods through ethnic media such as television, radio and newspapers.

BART could continue and expand advertising and outreach to local and ethnic media sources, including TV public service announcements, radio, print and web-based outlets. Community participants also suggested that in-person appearances by BART staff or Directors on local media outlets would be particularly effective. Specific media outlet suggestions are compiled in Appendix C and designated by population, language, and/or geographic group. These suggestions will be used to inform future participation strategies.

8. Coordination with Community Events

(Public information, outreach and public input)

In cooperation with community organizations, BART should continue its current practice of hosting information tables that provide materials about BART service and outreach methods at community events and activities. These events can range in scale from large city-wide events to localized activities. CBO representatives and community members recommended that outreach be conducted in locations where people already gather, for instance, at community events such as fairs and festivals. Most community events can help BART reach specific audiences such as seniors, youth, families with children, commuters and others. Community members suggested that BART use assistance from bi-lingual community partners to ensure that LEP persons receive adequate and accurate information in their language.

Community Input – Coordination with Community Events

Community input in the form of comments received during the PPP process indicated that low income, minority and LEP participants supported BART's efforts to coordinate public participation methods with community events. PPP participants suggested the following specific events for future BART coordination: the El Sobrante Stroll, El Cerrito 4th of July, Solano Stroll in Albany, the El Cerrito Farmers Market, the San Mateo County Fair, Cinco de Mayo, and soccer games hosted by the Liga Latina Soccer League in Concord.

9. Coordination with Other Agencies

(Public information and outreach)

BART may develop partnerships with agencies that regularly communicate with local residents. BART could identify agencies in the project area by considering who serves the population and where they convene. BART may consider the following types of agencies to comprehensively reach low income, minority and LEP populations: faith-based, geographic-specific such as tenant associations, neighborhood and community, education, social services, recreation, environmental, political, youth- and senior-oriented organizations.

BART can work with these partners to provide information about public participation opportunities, included in notices and regular mailings sent by these agencies.

10. Government Meetings

(Public information and outreach)

BART can continue to provide updates on its plans and projects to federal, state and local elected officials through regularly scheduled government meetings. BART regularly sends letters and emails that summarize decisions and potential decisions. BART will need to contact these entities in advance to ensure they are on the agenda and that any helpful information can be included in the meeting packet.

11. Regular Meetings of Civic and Community Organizations

(Public information, outreach and public input)

BART can provide updates on its policies, projects, strategies and methods by participating periodically in scheduled meetings of local civic and community organizations. These gatherings provide an opportunity to make a presentation and answer questions. Depending on the meeting format, BART may also be able to solicit public input at these meetings.

12. Public Participation at BART Board Meetings

(Public information, outreach and public input)

Currently, to comment at a meeting of the BART Board of Directors, a participant must complete and submit a speaker card. Individuals are then called on in the order the speaker cards were received and are allowed to speak for a limited amount of time, usually 2-3 minutes.

BART will continue its current public participation rules, which help the Board manage the high level of participation that often occurs at BART meetings.

13. Participation by BART Directors

(Public information, outreach and public input)

Community members expressed a desire to see their local BART Directors take a more active role in all public participation methods. Community members also asked for a report of BART Director activities in their Districts as a part of each Board meeting.

Currently, calls and emails to a Director all go to one centralized phone number and email address. Some participants expressed a desire to reach their elected representative directly, similar to the way they can reach their supervisor or council person. BART staff could work with the Directors to enhance direct communication.

BART Directors could continue their efforts to attend as many public participation methods as possible and be available to communicate with residents. Community members want BART Directors to be kept fully informed of the results of public participation methods. BART staff may summarize the issues discussed and the results of public participation methods and share the information with the BART Board and the public.

14. Community Meetings

(Public information, outreach and public input)

Community members have a variety of preferences for public input opportunities at community meetings. Meeting formats should be tailored to help achieve specific public participation goals. Some meetings are designed to share information and answer questions. Others are designed to engage the public in providing input, establishing priorities and helping to achieve consensus on a specific recommendation. It is important to create an agenda that works to achieve BART's goals but is relevant to and not overwhelming for the public.

For all meetings, the venue should be a facility that is fully accessible for persons with disabilities and, preferably, is served by public transit. The venue should be a location that is familiar and comfortable for the target audience. If a series of meetings are scheduled on a topic, BART may consider different meeting locations, since no one location is usually convenient to all participants.

14a. Community Meeting Formats

i. Open House

(Public information, outreach and public input)

This format provides opportunities for participants to receive information at their own pace by visiting a series of information stations that may include table top displays, maps, photographs, visualizations and other tools. Individual questions are responded to by staff and technical experts. Some open houses include a short educational presentation and comment period at a designated time. Participants are often given comment cards so they can provide written comments. Staff may be assigned to take verbal comments and transcribe them to provide a written record. The Open House Format can be effective when BART is seeking to introduce a new concept or when a lengthy process has been finalized and BART is sharing the final results.

ii. Workshops

(Public information, outreach and public input)

Workshops feature an educational presentation designed to orient participants to the issue being discussed. Workshops often include break-out or discussion groups, where participants have the opportunity to discuss topics in small groups. Participants can share their feedback orally during the small group discussion and in writing on comment cards.

Workshops include the use of tools that promote interaction and may include: electronic or show-of-hands polling, mapping exercises, discussion questions, priority setting methods and other techniques to promote dialogue and discussion.

iii. Large Group Discussion

(Public information, outreach and public input)

These meetings are usually focused on a specific topic and feature an informational presentation followed by a comment period. The comment period can be formal or informal depending on the number of participants and the meeting venue. Individual comments are often limited to 2-3 minutes, especially when there are a large number of people wanting to comment. This format can also include some interactive techniques suitable for a large group such as electronic or show of hands polling or short questionnaires or surveys.

PPP Survey Results and Community Input – Community Meeting Formats

Survey results received during the PPP process indicated population-specific findings regarding community meeting formats. Note that this data is not meant to indicate that only the method receiving the largest number of votes should be used in isolation – a variety of methods is important.

Participants in the PPP development process were given a list of input methods and asked to select one or more of the methods that they thought would help them express their views at meetings. The most popular methods among PPP survey respondents for expressing their views at community meetings were as follows:

- Low income (57% of 756 respondents), Asian or Pacific Islander (65% of 575 respondents), Spanish, Hispanic or Latino (58% of 230 respondents), Spanish-speaking (63% of 193 respondents), Chinese-speaking (69% of 67 respondents), and Vietnamese-speaking (77% of 413) PPP survey respondents indicated that they preferred to express their views through having a translator present at community meetings.
- Spanish-speaking (63% of 193) PPP survey respondents also preferred to use written translated material at community meetings.
- American Indian or Native (51% of 101) PPP survey respondents preferred large group discussions to express their views at community meetings.
- Black/African American (52% of 64) PPP survey respondents preferred small group discussions to express their views at community meetings.
- Electronic voting was the least preferred method of expressing views at community meetings for low income and LEP PPP survey respondents, as follows:
    - 4% of 756 low income PPP survey respondents
    - 5% of 193 Spanish-speaking PPP survey respondents
    - 6% of 67 Chinese-speaking PPP survey respondents
    - 2% of 413 Vietnamese-speaking PPP survey respondents

- A low income PPP development participant emphasized the importance of weighing all input, including community comments and surveys. He stated, "My main concern with voting methods such as electronic or voting by hand at public meetings is being forced to choose options that no one agrees with. There should always be the option for people to express alternatives, or not agree with any proposals presented."

Participants in the PPP development process were also asked to select one or more preferences from a list of methods for having detailed materials presented to them for a meeting. The most popular methods among PPP survey respondents for having detailed materials presented to them for a meeting were as follows:

- Spanish-speaking (58% of 193 respondents), American Indian or Native (53% of 101 respondents), Black/African American (53% of 64 respondents), and Spanish, Hispanic or Latino (57% of 230 PPP survey respondents indicated that they preferred to have detailed information presented to them at community meetings via a live presentation.
- Vietnamese (59% of 413) PPP survey respondents preferred to review information online before a community meeting.

14b. Community Meeting Considerations

i. Scheduling

BART staff could coordinate the scheduling of community meetings with community partners to minimize conflicts. However, some scheduling conflicts may be unavoidable when a public participation activity is urgent or linked to a time-sensitive topic.

ii. Meeting Locations

Convenient and comfortable meeting locations are key to soliciting active public participation, particularly in low income, minority and LEP communities. BART can host meetings in venues recommended by community members who understand their community dynamics best.

Community members identified locations specific to their area including the local branch libraries, YMCA, local school or community college, churches and many others. It is important that meetings are held in different venues since it is unlikely that no one location is ideal for all community members. Meeting locations can be rotated to ensure access for as many community members as possible. Community partners should be reminded that regardless of the popularity or convenience of a venue, BART is required to conduct all public participation methods in locations that are fully accessible to persons with disabilities and, preferably, the venues should be served by public transit.

iii. Meeting Times

A convenient meeting time is important to low income, minority and LEP survey participants. Public participation methods can be scheduled at varying times of day and on different days of the week Survey data indicates that the majority of community members prefer meetings to be held on weekends. Weeknights after traditional work hours are also acceptable. Fewer community members can participate during the workday; however, seniors are more likely to attend daytime activities scheduled during the week.

PPP Survey Results and Community Input – Meeting Times

Survey results received during the PPP process indicated distinct population-specific preferences regarding meeting times among PPP survey respondents, as follows:

- Low income (65% of 746 respondents), Asian or Pacific Islander (80% of 470 respondents), Chinese-speaking (56% of 66 respondents), and Vietnamese-speaking (94% of 411) PPP survey respondents prefer meetings to be held on weekends.
- Spanish-speaking (61% of 188 respondents), American Indian or Native (51% of 100 respondents) Black/African American (72% of 64 respondents) and Spanish, Hispanic or Latino (61% of 225) PPP survey respondents prefer weeknight meetings.

iv. Number of Meetings

Some transportation decisions require more meetings than others. BART has held anywhere from two to more than twenty meetings for system-wide decisions. For decisions that affect one or two existing stations, BART has held anywhere from one to three meetings. The number of meetings will depend on the project.

v. Childcare and Refreshments

Many adults with childcare responsibilities can only participate if childcare is provided. Childcare services can be available on-site and provided by a community partner staff or volunteers who are screened to work with youth and have appropriate training. Bi-lingual childcare providers may also be needed, depending on community interpretation needs. BART will need to receive requests for childcare at least 72 hours in advance. Community members suggested that many community members are more likely to attend if refreshments are provided, especially if the meeting is held close to meal time.

PPP Survey Results – Childcare and Refreshments

Survey results received during the PPP process indicate the following population-specific findings regarding childcare and refreshments being provided at meetings:

- Childcare was identified as a "very important" or "somewhat important" factor in their decision to attend a BART-related meeting by low income, minority and LEP PPP survey respondents, as follows:
  - 82% of 331 low income PPP survey respondents
  - 76% of 89 American Indian or Native PPP survey respondents
  - 67% of 163 Asian or Pacific Islander PPP survey respondents
  - 67% of 55 Black/African American PPP survey respondents
  - 89% of 205 Spanish, Hispanic or Latino PPP survey respondents
  - 94% of 168 Spanish-speaking PPP survey respondents
  - 85% of 33 Chinese-speaking PPP survey respondents
  - 68% of 59 Vietnamese-speaking PPP survey respondents
- Refreshments being provided at meetings was identified as a "very important" or "somewhat important" factor in their decision to attend a BART-related meeting by low income, minority and PPP survey respondents, as follows:
  - 92% of 676 low income PPP survey respondents
  - 87% of 90 American Indian or Native PPP survey respondents
  - 92% of 508 Asian or Pacific Islander PPP survey respondents
  - 73% of 55 Black/African American PPP survey respondents
  - 86% of 199 Spanish, Hispanic or Latino PPP survey respondents
  - 86% of 162 Spanish-speaking PPP survey respondents
  - 84% of 60 Chinese-speaking PPP survey respondents
  - 96% of 365 Vietnamese-speaking PPP survey respondents

15. Focus Groups

(Public information, outreach and public input)

BART will continue to host discussion groups held with small, targeted groups of participants. Focus groups can provide in-depth information about projects, plans or issues that may impact a specific group or community. These groups can be both formal and informal and can be conducted in a specific language. BART will proactively include low income, minority and LEP communities.

PPP Survey Results and Community Input – Focus Groups

Many participants expressed discomfort with large meeting formats. Survey results received during the PPP process indicate the following population-specific findings regarding focus groups:

- Focus groups were identified as one of the best methods other than a community meeting to provide input to BART by low income, minority and LEP PPP survey respondents as follows:
    - 86% of 329 low income PPP survey respondents
    - 50% of 101 American Indian or Native PPP survey respondents
    - 88% of 191 Asian or Pacific Islander PPP survey respondents
    - 84% of 51 Black/African American PPP survey respondents
    - 92% of 162 Spanish, Hispanic or Latino PPP survey respondents
    - 97% of 128 Spanish-speaking PPP survey respondents
    - 87% of 39 Chinese-speaking PPP survey respondents
    - 95% of 88 Vietnamese-speaking PPP survey respondents

16. Special Events

(Public information, outreach and public input)

BART can develop special events to announce, highlight or kick-off its outreach about a policy, program, project or activity. Events can be region-wide or focus on a specific station or geographic area. An example might be to convene town hall meetings in each Board member's district. Along with providing information and/or collecting input, the events should include something interactive and/or entertaining to attract participation.

17. Walking Tours and On-Site Meetings

(Public information, outreach and public input)

BART can host walking tours and on-site meetings specific to locations that interest the public, in order to highlight an initiative, project or facility. Walking tours can be primarily educational and BART may ask participants to complete a survey or questionnaire during or after the tour. Walking tours may be helpful in helping BART collect community opinion on issues such as station improvements and proposed extensions. BART can work with community partners to host language specific meetings. For example; meetings can be held for specific populations in Spanish-only, Chinese-only, Vietnamese-only and Korean-only.

18. Key Person Interviews

(Public information, outreach and public input)

BART staff and Directors could continue to meet individually with community leaders and stakeholders to exchange information and gain early insight into upcoming outreach and engagement methods. BART will specifically include low income, minority and LEP populations. Interviewees are asked the same set of questions to allow BART to compare responses and identify key themes and issues. BART may contact interviewees throughout the span of a project or activity to keep them engaged in the public participation process.

19. Surveys

(Public information, outreach and public input)

BART may conduct surveys in print, by telephone and online to collect public opinion on specific topics or issues. Web surveys provide general qualitative data, since it is difficult to control who responds. Print surveys can also provide substantial information, but response rates are typically low.

Depending on the data being collected, BART should consider methodologies that provide statistically valid data when possible. BART should also consider strategies for letting people know that surveys are available in multiple languages, so as to increase the response rate from low income, minority and LEP populations.

20. Telephone Information and Comment Line

(Public information, outreach and public input)

All BART Station Agents, BART Police and Call Center Operators have access to Language Line Services (LLS), which is an over-the-phone language interpretation service. The Service allows BART Station Agents to call the LLS number when a customer is unable to speak English. The professionally trained and tested LLS interpreters listen to the customer, analyze the message and accurately convey its original meaning to the BART staff member, then respond to the customer in his/her own language. The LLS offers interpretation in 170 languages.

Non-English speaking attendees at community meetings advocated strongly for future BART messages in more languages. BART could work not only to translate future BART messages into these languages, but also to ensure that it better promotes the services currently available to non-English speakers, such as LLS, to make the system more accessible and user-friendly to all communities. New Language Assistance Services outlined in the LAP aim to increase LEP population access to services and benefits in the BART system.

PPP Survey Results and Community Input – Methods of Providing Input to BART Other than Community Meetings

Participants in the PPP development process were asked to rank various methods of providing input to BART in addition to community meetings by indicating whether they were "very likely," "somewhat likely," or "not likely" to use a particular method.

Survey results indicate the following population-specific findings regarding most preferred input methods:

- Low income (73% of 468 respondents), Asian or Pacific Islander (74% of 322), and Vietnamese-speaking (92% of 205) PPP survey respondents prefer writing a letter to BART in order to provide their input.
- Spanish, Hispanic or Latino (75% of 162 respondents), Spanish-speaking (80% of 128) and Chinese-speaking (73% of 37) PPP survey respondents prefer participating in focus groups in order to provide their input to BART.
- American Indian or Native PPP survey respondents (44% of 101) prefer providing their input to BART via mail-back surveys.
- Black/African American PPP survey respondents (63% of 52) prefer providing their input to BART via online surveys.

However, because all respondents did not necessarily rank all methods, the sample size varies greatly from method to method. Also, in many cases the distinction between preferences is not particularly great. Therefore, a variety of methods for providing input to BART should be made available to community members.

21. Community Advisory Committee on Title VI Compliance

(Public information, outreach and public input)

Several community groups, minority and LEP participants recommended that BART develop a local advisory group to provide advice on public participation methods. BART believes that the creation of a Title VI Community Advisory Committee (CAC) has merit and can consider the feasibility of such a committee, given capacity and availability of resources. Currently, BART supports three community advisory groups: the Business Advisory Committee, Citizens Oversight Committee for the Earthquake Safety Program and the Citizen Review Board of the BART Police Department.

BART Public Participation Plan - Toolbox of Public Participation Methods

Public Participation Method	Printed Materials		BART Website and Social Networking Methods						Postcards and Letters Distributed by Mail			Email			Media Targeted to Ethnic Communities*			Partnerships with CBOs				Coordination		Participation by BART Directors	Community Meetings												Community Meeting Considerations							Surveys		Telephone information and comment line	Community Advisory Committee	Key Person Interviews	Station Information Resources	Government meetings	Regular meetings of civic and community organizations	Public participation at BART Board Meetings
																									Open House		Workshops																									
	Produced by BART	Produced by other organizations	BART website	Information for review online prior to community meeting	Online video for review prior to community meeting	Online discussion	Webcast meetings	Inform Participants after meetings on BART website	Notify of BART public participation opportunities	Report public participation results	Provide input to BART	Notify of BART public participation opportunities	Report public participation results	Provide input to BART	Radio	Newspapers	Television	Religious	Political	Environmental	Urban/Regional Planning	With community events	With other agencies			Table top displays, maps, charts, etc.	Live presentations	Small group discussion	One-on-one discussion	Electronic voting	Written survey	Show-of-hands voting	Large Group Discussion	Special Events	Walking Tours and on-site meetings	Focus Groups	Available translation services	Translated written materials	Scheduling	Convenient meeting locations	Meeting Times - weekends	Meeting Times - weeknights	Childcare and refreshments	Printed and mail back	Online							
Low income																																																				
Low income	●	●	●	○	○	●	○	○	●	●	●	○	○	●	●	●	●	●	○	○	○	●	–	●	–	○	○	○	○	○	○	○	○	–	–	●	●	○	–	●	●	○	●	●	●	●	●	–	–	–	–	–
Minority																																																			
American Indian or Native Alaskan	●	●	–	○	○	○	○	○	●	●	○	○	○	○	–	–	–	●	○	○	○	●	–	●	–	○	●	○	○	○	○	○	●	–	–	●	○	○	–	●	○	●	●	●	●	○	●	–	–	–	–	–
Asian or Pacific Islander	●	●	–	●	○	●	○	○	●	●	●	○	○	●	●	●	●	●	○	○	○	●	–	●	–	○	○	○	○	○	○	○	○	–	–	●	●	○	–	●	●	○	●	●	●	●	●	–	–	–	–	–
Black or African American	●	●	–	○	○	●	○	○	○	○	●	●	●	●	–	–	–	●	○	○	○	●	–	●	–	○	●	●	○	○	○	○	○	–	–	●	●	○	–	●	○	●	●	–	●	●	●	–	–	–	–	–
Spanish, Hispanic or Latino	●	●	–	○	○	●	○	○	●	●	●	○	○	●	●	●	●	●	○	○	○	●	–	●	–	○	●	○	○	○	○	○	○	–	–	●	●	●	–	●	○	●	●	●	●	●	●	–	–	–	–	–
Limited English Proficiency																																																			
Spanish-speaking	●	●	–	○	○	●	○	○	●	●	●	○	○	●	●	●	●	●	○	○	○	●	–	●	–	○	●	○	○	○	○	○	○	–	–	●	●	●	–	●	○	●	●	●	●	●	●	–	–	–	–	–
Chinese-speaking	●	●	–	○	○	●	○	○	●	●	●	○	○	●	●	●	●	●	○	○	○	●	–	●	–	○	○	○	○	○	○	○	○	–	–	●	●	○	–	●	●	○	●	●	●	●	●	–	–	–	–	–
Vietnamese-speaking	●	●	–	●	○	●	○	○	●	●	●	○	○	○	●	●	●	●	○	○	○	●	–	●	–	○	○	○	○	○	○	○	○	–	–	●	●	○	–	●	●	○	●	●	●	●	●	–	–	–	–	–
Korean-speaking	●	●	–	–	–	–	○	–	●	●	●	○	○	○	●	●	●	●	○	○	○	●	–	●	–	○	–	○	–	○	–	–	–	–	–	–	–	–	–	–	–	–	●	–	–	○	●	–	–	–	–	–
Russian-speaking	●	●	–	–	–	–	○	–	●	●	●	○	○	○	●	●	●	●	○	○	○	●	–	●	–	○	–	○	–	○	–	–	–	–	–	–	–	–	–	–	–	–	●	–	–	○	●	–	–	–	–	–
Tagalog-speaking	●	●	–	–	–	–	○	–	●	●	●	○	○	○	●	●	●	●	○	○	○	●	–	●	–	○	–	○	–	○	–	–	–	–	–	–	–	–	–	–	–	○	●	●	–	–	○	●	–	–	–	–	–

** Ethnic Media Resources include:*

	Television	Newspaper
Spanish-speaking	Telemundo 18, Univision 14	El Mensajero, El Tecolote
Chinese-speaking	Channels 8 and 26	Sing Tao Daily, World Journal
Vietnamese-speaking	Cable 6, Channel 26	Mo, Thoi Bao, SaiGon Nho
Korean-speaking		Korean Times, Korean Daily Times
Russian-speaking	Channel One Russia	Russkaya Zhizn, New Life, Vzglyad
Tagalog-speaking	Channels 8, 23, 26 and TFC	Philippine News, Philippines Today

Legend

● = Public participation method preferred by PPP development participants

○ = Public participation method not preferred by PPP development participants

– = Public participation method with no strong preference or not discussed by PPP development participants

This page deliberately left blank

D. BART's Ongoing Public Participation Methods

(Public information, outreach and public input)

BART will continue to promote and enhance the use of its ongoing public participation methods to reach out to low income, minority and LEP populations. BART will conduct proactive outreach to expand the reach, inclusivity and effectiveness of these ongoing methods. Many community members participating in the development of this plan are not fully aware of these resources and BART should conduct specific methods to promote their use. Examples of these existing methods include:

- BART website (www.bart.gov)
- BART Facebook page
- BART communications via Twitter
- Regular newsletters distributed through BART stations
- Regular communications with media
- BART Board meetings
- Key person interviews
- Focus groups
- Partnerships with CBOs
- Communication with elected officials
- Press briefings and news releases
- Regular emails to community members
- Participation in community fairs and festivals
- Sponsorship of major community events
- Passenger bulletins in stations
- Mailings to neighbors of stations
- Educational tours and briefings
- Language Line Services (LLS)
- Language interpreters at public meetings
- Written language assistance services

BART is committed to reducing the barriers encountered by LEP persons in accessing its services and benefits, to the extent resources are available. BART will also evaluate how to consolidate its language assistance measures to deliver the most cost-effective services.

V. PUBLIC PARTICIPATION STRATEGY EXAMPLES

During the PPP review process, community members expressed requests for a more tailored public participation strategy for their community or neighborhood.

The following public participation strategy examples can be utilized as guides to develop a project-specific, tailored strategy, once a project is identified as having impacts on low income, minority and LEP communities. The following examples demonstrate the level of specificity BART could provide when developing a public participation strategy at the community level.

The following public participation strategy examples include an example strategy useful for a variety of BART project types and strategies created and implemented utilizing the principles of the PPP for specific BART projects. Each strategy example is detailed to demonstrate how population-appropriate outreach methods can be and were identified and utilized to develop and conduct transportation decision-specific outreach strategies. Each strategy follows basic public participation steps:

- Identify target populations and public participation needs;
- Coordinate internally to identify methods and develop public participation strategy;
- Coordinate with CBO partners;
- Conduct outreach;
- Identify language needs per the LAP;
- Implement public participation strategy; and
- Compile, review and report results.

These strategy examples may be used to guide, rather than prescribe, the development of future targeted outreach strategies.

A. Example of Public Participation Strategy for BART Projects

This example could be adapted for a variety of scenarios such as a construction project, service change or fare increase.

The public participation strategy for the example project would be communicated broadly throughout the BART service area. BART would use its ongoing tools, which are well-established and reach a wide audience. There would also be significant public participation activities focused in the different communities, especially those most impacted by BART's proposal.

At the community level, BART would take the following steps to implement a geographically focused public participation strategy:

Identify Target Populations and Public Participation Needs

- Perform demographic analysis of the population.
- Identify significant populations for targeted outreach.

Coordinate Internally

- Government and Community Relations Department (GCR), Office of Civil Rights (OCR), and the project team determine the most appropriate form of outreach to be meetings and determine the goals and objectives for the meeting.
- Develop a draft public participation strategy.

Coordinate with CBO Partners

- Identify all CBO partners by considering the following in the project area: who serves the population and where they convene.
- Consider the following types of CBOs to comprehensively reach low income, minority and LEP populations within the project area: faith-based, geographic-specific such as tenant associations, neighborhood and community, education, social services, recreation, environmental, political, youth- and senior-oriented organizations.
- Clearly explain the desired outcomes for the different public participation methods such as sharing information, collecting input and setting community priorities.
- Identify the best way to publicize the public participation methods, select meeting dates and venues, and determine translation needs. The community advisors can help BART avoid potential scheduling conflicts and take advantage of existing events where they can easily reach a significant number of community members.
- Identify the recommended participation methods to achieve these outcomes. For example, a CBO may recommend a meeting format that allows small group discussion so that participants have an opportunity to discuss and understand the information being presented. For a construction project, BART might host some on-site informational tours to help community members better understand the impact the project would have on their immediate neighborhood.

Conduct Outreach

- Work to publicize the activities, identify performance measurements and set targets for participation from the area.
- Ensure that flyers, notices and other outreach methods clearly describe the issue and purpose of the meeting or public participation activity.
- Identify a specific number and sequence of public participation methods and clearly communicate how BART decision makers would use the public input.

Identify Language Service Needs

- Identify language interpretation needs, translate outreach documents, and provide language interpretation services at the activity.

Implement Public Participation Strategy

- Implement the methods identified in the public participation strategy.

Compile, Review and Report Results

- Continue to review the participation goals established at the beginning of PPP strategy development and monitor progress and performance.
- Regularly update the community on the status of the issue and identify additional opportunities for community input.
- Make sure the community is aware of key decision-making activities, such as Board meetings, where action would be taken, so community members can see how the decision was made.
- Communicate the results back to the community, providing a record of the number and characteristics of participants and date, time and location of meetings, and describing the rationale for how and why suggestions made through community input were or were not implemented.

B. Specific Project Examples

Specific Project Example 1

This project is a 10-mile extension eastward from the Pittsburg/Bay Point BART Station near Hillcrest Avenue. Construction began in late 2010. Service opening is scheduled for 2015 and will coincide with the completion of the widening of State Highway 4.

In July 2010, BART hosted three meetings to solicit input from East Contra Costa County community members regarding station access, span of service, fare and travel times.

Identify Target Populations and Public Participation Needs

- Performed demographic analysis of the population within the project corridor.
- Identified significant populations for targeted outreach; low income, minority and LEP populations.

Coordinate Internally

- GCR, OCR, and the project team determined the most appropriate form of outreach to be meetings and determined the topics.
- Determined the locations for three meetings to cover the entire corridor based on the demographic analysis and recommendations from community leaders. Meetings were scheduled in the cities of Pittsburg, Antioch and Brentwood.
- Developed public participation strategy.

Coordinate with CBO Partners

- GCR researched and identified the following specific, local organizations through which to conduct targeted outreach to Blacks, Hispanic and Latinos, Asian and Pacific Islanders, low income and Spanish and Chinese language

speaking corridor residents: ALIVE – Futures Explored, Inc. (developmentally disabled community); NAACP, Antioch; Monument Community Partnership, Concord; La Clinica, Pittsburg; West County Toxics Coalition, Dr. Henry Clark (multi-racial, low income); Contra Costa Interfaith Supporting Community Organization (CCISCO); Antioch Church Family; Holy Rosary Church, Antioch; Antioch Christian Center; Community Presbyterian Church, Pittsburg; Immaculate Heart of Mary, Brentwood; and Golden Hills Community Church, Brentwood.

Conduct Outreach

- Meeting agenda produced in English, Spanish and Chinese.
- Created a meeting notice in multiple languages (English, Spanish and Chinese) for conventional mail distribution and circulation at community and civic organizations.
- Mailed multi-lingual meeting notice to a half-mile radius around each meeting location, as follows: Antioch, Nick Rodriguez Community Center, 625 notices mailed; Pittsburg, Pittsburg Senior Center, 1,550 notices mailed; Brentwood, Brentwood Senior Center, 1,200 notices mailed.
- GCR, OCR and Planning drafted a meeting survey instrument which was produced in English, Spanish and Chinese.
- Distributed multi-lingual meeting notices to environmental advocacy groups in the corridor: Transform, Sierra Club, East Bay Bicycle Coalition and Sustainable Contra Costa.
- Posted meeting flyers at Senior Centers, Community Centers, Libraries, City Halls, Pittsburg/Bay Point BART station and on cars at Brentwood and Antioch Park and Ride lots.
- Informed the staffs of the following City, County, State and Federal elected officials of upcoming meetings and asked them to share the information with their constituents: City Councils and Mayors of Pittsburg, Antioch, Oakley, Brentwood; Contra Costa County Supervisors; State Assembly members and Senator; and U.S. Congressional Representatives.
- Contacted local City Managers and Planning Commissioners to inform them of meetings.
- Contacted local transportation planning agency/groups and requested that meeting flyer be distributed among members (CCTA, 511.org, TRANSPLAN).
- Contacted and informed other transit agencies in the corridor (Tri Delta, AC Transit, County Connection).
- Requested all cities, county and chambers of commerce to post the meeting notice on their website.
- Electronically posted meeting notice including: BART website, project page, Facebook and Twitter.
- Advertised meetings in local newspapers including: Contra Costa Times, Antioch Press, Brentwood Press, and El Mundo, among others.

- Utilized an email list/database created through the project to send out meeting notice via email blast.

Identify Language Service Needs

- Spanish language interpretation was requested for one meeting and translation services were provided.

Implement Public Participation Strategy

- Implemented public participation strategy, which included three public meetings.

Compile, Review and Report Results

- Compiled and reviewed results.
- Reported results.

Specific Project Example 2

BART is preparing a station access plan for the Daly City BART station area. The plan focuses on key elements including the bus intermodal facility; bike, pedestrian and station circulation issues related to access and safety; and consideration of possible amenities including wayfinding signage and real time technology. The plan area encompasses a half-mile radius around the station and straddles the southern edge of San Francisco and the northern edge of Daly City.

In Spring 2011, BART hosted two community meetings to solicit input from Daly City and San Francisco community members who live in the study area. The study continues through 2011, with a third meeting planned for Summer 2011. Completed study / final report is anticipated in Fall 2011.

Identify Target Populations and Public Participation Needs

- Performed demographic analysis of the population within the study area.
- Identified significant populations for targeted outreach; low income, minority (Asian, Hispanic) and LEP (Tagalog) outreach to a large Pilipino population and smaller Spanish speaking population.

Coordinate Internally

- GCR, OCR and Planning determined the most appropriate form of outreach to be meetings.
- Determined the meeting locations would be central, accessible and walkable to the study area.

Coordinate with CBO Partners

- GCR researched and identified specific, local organizations through which to conduct targeted outreach low income, Asian, Hispanic and Tagalog and Spanish language speakers in the study area: North Peninsula Neighborhood

Services Center; El Concilio of San Mateo (Spanish speakers, low income); Pilipino Bayanihan Resource Center (Asian, Tagalog and Spanish speakers); North Peninsula Food Pantry & Dining Center of Daly City; Liwanag Kultural Center (Asian); Daly City Community Service Center (multi-cultural); Filipino Community Center (Asian, Tagalog speakers); Pacifica Resource Center (Asian, Hispanic, low income, Spanish and Tagalog speakers); St. Bruno's Catholic Church (multi-cultural, low income); Legal Aid Society of San Mateo; Samaritan House (low income); Merced Extension Triangle Neighborhood Association; Doelger Senior Center; City of Daly City Planning Department; City of San Francisco Office of Supervisor Sean Elsbernd; War Memorial Community Center; Westlake Community Center; Colma Community Center; Lincoln Community Center; Parkmerced; San Francisco State University (multi-cultural, low income); Alma Via of San Francisco (senior housing).

- Partnered with local community-based organization (Pilipino Bayanihan Resource Center to conduct extensive outreach and host community meeting).

Conduct Outreach

- Created and hand-distributed first meeting notice to BART passengers who use the Daly City BART Station during morning and evening peak commute periods, as well as conventional mail distribution, and circulation by hand to local organizations, community leaders, businesses and community-based organizations
- Created multi-lingual meeting notice for BART passengers who use the Daly City BART Station during morning and evening peak commute periods, as well as conventional mail distribution, and circulation by hand to local organizations, community leaders, businesses and community-based organizations.

Identify Language Service Needs

- Translation services were offered but no requests were submitted.

Implement Public Participation Strategy

- Implementing public participation strategy, which includes three community meetings.

Compile, Review and Report Results

- Will compile and review results.
- Will report results.

Specific Project Example 3

The purpose of this project is to implement BART's Strategic Maintenance Plan and to accommodate an expanded fleet. Project construction will take place in two Phases, with Phase 1 construction potentially beginning in 2012.

In October 2010, BART hosted a public meeting to discuss and solicit input from community members regarding the proposed project.

Identify Target Populations and Public Participation Needs

- Performed demographic analysis of the population surrounding the project area (Hayward and Union City).
- Identified significant populations for targeted outreach: low income and LEP persons (Spanish, Chinese and Tagalog language speakers).

Coordinate Internally

- GCR, OCR and project staff determined the most appropriate form of outreach to be a meeting and determined the goals and objectives of the community meeting.
- Developed public participation strategy.

Coordinate with CBO Partners

- GCR researched and identified specific, local organizations through which to conduct targeted outreach to low income and Spanish- and Tagalog-speaking area residents.

Conduct Outreach

- Created a meeting notice in multiple languages (English, Spanish and Tagalog) for conventional mail distribution and circulation through community and civic organizations.
- Mailed a multi-lingual meeting notice to approximately 4,600 residents and 600 businesses within a one-mile radius of the project.
- Posted a multi-lingual meeting notice on BART website and distributed it to the following community and municipal organizations: Afghan & International Refugees Support Services, Alameda County One Stop Career Center, Centro de Servicios, Continental Mobile Home Park, Daison Japan (Asian and Pacific Islander Market), Eden Area YMCA, Hayward City Hall, Hayward Day Labor Center, Hayward Family Resource Center, Hillview Baptist Church, Hillview Crest Elementary School, Kennedy Community Center, La Familia Counseling Services, Lincoln Child Center, Marina Food (Asian and Pacific Islander Market), Masjid Abubaker Siddiq (Islamic Mosque), New Haven Adult School, Nichiren Buddhist Center International Center, Our Lady of the Rosary Parish, Rental Housing Owners Association of Hayward, South Hayward Parish, Spanish Ranch Mobile Home Park No. 2, Tiburcio Vasquez Health Center, Union City Library, and the City Hall of Union City.
- Advertised meetings in local and ethnic newspapers including: Tri-City Voice, Sing Tao (Chinese), Philippine News (Tagalog), and Philippines Today (Tagalog).

Identify Language Service Needs

- Chinese language interpretation was requested for one meeting and translation services were provided.

Implement Public Participation Strategy

- Implemented public participation strategy, which included one public meeting.

Compile, Review and Report Results

- Compiled and reviewed results.
- Reported results. Project information on the comment period and meeting was made available on the BART website in English, Spanish, Chinese, Korean, Vietnamese and Tagalog.

Specific Project Example 4

This project is a 5.4 mile extension of the end of the line in Fremont to a new station. Construction is underway and anticipated to be complete in late 2014.

In April 2011, BART hosted two public meetings to solicit input from southern Alameda County and northern Santa Clara County residents on key station elements including access, parking, fares and amenities. Express bus riders along the corridor were also surveyed.

Identify Target Populations and Public Participation Needs

- Performed demographic analysis of the population within the corridor.
- Identified significant populations for targeted outreach: Hispanic, Asian and Pacific Islander and LEP persons (Spanish, Chinese, Vietnamese and Korean language speakers).

Coordinate Internally

- GCR, OCR and project staff determined the most appropriate form of outreach to be two meetings and a field survey.
- Determined the locations for two meetings within the corridor based on the demographic analysis and recommendations from community leaders. Meetings were scheduled in Fremont and Milpitas.
- Developed public participation strategy.

Coordinate with CBO Partners

- GCR researched and identified the following specific local organizations through which to conduct targeted outreach to Spanish-, Chinese-, Vietnamese- and Korean-speaking corridor residents: Fremont Family Resource Center; Bay Area Immigration and Refugee Services (BAIRS); South Bay Chinese Club; India Community Center; Milpitas Food Pantry; The Family Giving Tree; Jain Center of Northern California; LIFE Eldercare.

Conduct Outreach

- Performed field surveys in Downtown San Jose and at Fremont BART Station of express bus riders along the corridor.
- Contacted and worked with Santa Clara Valley Transit Authority (VTA) staff to inform them of the outreach process and determine what outreach they have done for the VTA BART extension project.
- Created a meeting notice in multiple languages (Spanish, Chinese, Vietnamese and Korean). Also, included a tag line in Persian and Hindi informing the speakers of those two languages that translation services and child care can be made available if requested 72 hours in advance of meeting time.
- Mailed multi-lingual meeting notice to a half-mile radius around each meeting location, as follows: Fremont, Warm Springs Community Center, 1,752 notices mailed; Milpitas, Milpitas Community Center, 893 notices mailed.
- GCR, OCR and project staff drafted a meeting survey instrument and field survey instrument which was produced in Spanish, Chinese, Vietnamese and Korean.
- Informed City staff and County elected officials of upcoming meetings and asked them to share the information with their constituents, including: City Councils and Mayors of Fremont and Milpitas, Local Chambers of Commerce, and Alameda County Board of Supervisors.
- Contacted local City Managers and Planning Commissioners to inform them of meetings.
- Electronically posted meeting notice including: BART website, project page, Facebook and Twitter.
- Advertised meetings in the following newspapers: Milpitas Post, Fremont Bulletin, Tri City Voice, India West, Vision Hispaña (Spanish), Kyocharo News (Korean), World Journal (Chinese) and Vietnam Daily News (Vietnamese).
- Contacted local neighborhood and business groups to request the distribution of the multi-lingual meeting notice, including: Irvington Business Association, Warm Springs Business, Community Association, Niles Main Street and Avalon HOA.
- Called and visited local community-based and faith based organizations including: South Bay Community Church, Fremont; First Baptist Church, Fremont; Church of Jesus Christ of Latter Day Saints, Fremont; Warm Springs Church, Fremont; Cross Point Church of Silicon Valley, Milpitas; Saint John the Baptist, Milpitas; Milpitas Community Church, Milpitas; India Community Center, Milpitas; Barbara Lee Senior Center, Milpitas; League of Women Voters; National Federation for the Blind; Fremont/Newark YMCA, California School for the Deaf, Fremont; Irvington Community Center, Fremont; Bay Area Community Services Center, Fremont; Warm Springs Community Center, Fremont; and Northwest Polytechnic University, Fremont.
- Contacted and informed other transit agencies in the corridor (AC Transit, VTA).

Identify Language Service Needs

- Korean language interpretation was requested for one meeting and translation services were provided.

Implement Public Participation Strategy

- Implemented public participation strategy, which included two public meetings.

Compile, Review and Report Results

- Currently compiling and reviewing results.
- Will report results.

VI. PERFORMANCE MEASURES AND OBJECTIVES

A. Monitoring and Tracking

Public Participation Plan

Community members emphasized accountability during the process of developing the PPP. BART's Office of Government and Community Relations will monitor and track its public participation methods and share results in a transparent way. This includes being clear about process timelines and changes at BART that affect public participation methods.

BART already has some information about the reach of its ongoing methods. For example, BART currently tracks how many people receive notifications by email or text and through its Facebook page. BART also tracks website hits, telephone inquiries, the number of newsletters distributed through its stations and other measures of community contacts. BART staff track the number of inquiries and comments they receive by phone, email and in-person.

These numbers can help track communication methods, but additional measurements will be needed to determine if public participation goals are being met. Depending on the nature and scale of the topic or decision at hand, BART will identify specific measurable objectives for public participation methods.

Some measurable performance objectives BART will consider include:

- Number of participants attending a participation activity.
- Percent of the participants from a specific geographic area.
- Number and percent of participants providing feedback in languages other than English (identify number of respondents by language).
- Number and percent of responses received to a survey or questionnaire.
- Number of webpage downloads occurring during a specific time period.
- Number and percent of participants signed up to receive web, phone, or mail-based communications as a result of a participation activity.
- Number and percent of contacts updated (on a monthly or quarterly basis) to ensure participants continue receiving notices and announcements.
- Number and percent of participants expressing satisfaction regarding the process or results of a participation activity.

Other Methods

Community partners may be able to help BART identify baseline information and other data to help determine additional performance measurement methods. It is also

important to ask community meeting participants how they heard about the meeting so as to determine how best to target outreach efforts.

B. Public Participation Outcomes

After each public participation strategy implementation, community members have expressed an expectation and preference that BART share what it has learned from the community, and how it took that information into account. BART should be able to demonstrate to the community that it has considered and explored the direction recommended by the public and taken that into account as part of its overall analysis. BART should explain its rationale when, for example, a highly popular suggestion was not implemented because it was found to be technically unfeasible or cost-prohibitive. BART staff and Directors need to report back on the results of the analysis for methods for which public input was sought.

C. Conclusion

The BART Public Participation Plan is intended to be a living document that will be informed by current and future practices, successes and lessons learned. BART could continue to adapt and modify its public participation practices and language assistance services over time.

The more than 1,000 community members who gave so graciously of their time during the last few months told us that not only must BART do a better job of reaching out, but we must also better define the services that we already have.

Through this process of asking the community to help us to create the most effective Public Participation Plan possible, we have learned that building bridges and trust among people who have historically felt excluded from real institutional decision-making is a journey that will take time and a redoubled commitment from all of the staff at BART.

Appendix VIII: BART Fatalities and Collisions Table

Fatalities/Collisions on BART
2013-2015

BART does not make a determination as to whether an incident is a suicide or accident; the coroners in each locality make that determination. The coroners are also responsible for identifying the victims. That information is not included in BART's records. Instances of collisions that do not result in death are recorded but no record is kept of the nature of the injuries or subsequent status of the person involved. Note: October 2013 employee deaths not included because we know it was not a suicide incident

Date	Location	Fatality/Collision
2/27/2013	Glen Park	Fatality
4/3/2013	12th Street	Fatality
4/22/2013	24th Street	Near Collision with Person (no injury)
6/18/2013	West Oakland	Fatality
6/18/2013	Hayward	Fatality
11/12/2013	El Cerrito Del Norte	Fatality
2014		
1/12/2014	Downtown Berkeley	Collison with Person
1/26/2014	Embarcadero	Collision with Person
3/4/2014	South of South Hayward	Fatality
3/11/2014	Balboa Park	Fatality
4/14/2014	Montgomery	Collision with Person
5/15/2014	Pleasant Hill	Fatality
5/30/2014	West Oakland	Fatality
7/4/2014	Richmond	Fatality
9/9/2014	Bay Fair	Collision with Person
11/3/2014	Between Concord and North Concord	Fatality
11/6/2014	San Leandro	Fatality
11/8/2014	North Berkeley	Collision with Person
11/25/2014	Downtown Berkeley	Fatality
11/25/2014	Embarcadero	Collision with Person
2015		
1/1/2015	El Cerrito Plaza	Near Collision with Person (no injury)
1/14/2015	Powell Street	Fatality
3/16/2015	Civic Center	Fatality
3/22/2015	Balboa Park	Fatality
3/31/2015	Richmond	Fatality
4/1/2015	El Cerrito Plaza	Fatality
	Launched Suicide Prevention 4/14/15	
4/16/2015	Civic Center	Fatality
5/29/2015	Powell	Fatality

6/24/2015	West Dublin/Pleasanton	Fatality
8/24/15	Embarcadero	Fatality
9/8/15	12th Street	Fatality
9/28/15	Ashby	Fatality
10/13/15	San Bruno	Fatality
12/20/15	Downtown Berkeley	Collison with Person
2016		
1/19/16	North Berkeley (north of station)	Fatality
3/5/16	Hayward	Fatality (died at hospital)
3/26/16	Downtown Berkeley	Fatality
	Ticket backs delivered to stations beginning of May	
5/19/16	On tracks between Hayward and South Hayward	Collison with Person
5/23/16	Embarcadero	Collison with Person
9/9/16	16th ST/Mission	Fatality
2017		
1/4/17	24 St/Mission	*BPD reports this was an accident based on accounts. Fatality (person died at hospital)
1/14/17	Ashby	Collison with person
2/7/17	On tracks near El Cerrito del Norte MP 10.92 R Line	Fatality
2/24/17	MacArthur	Collison with person
4/13/17	San Bruno	Collison with person
8/24/17	Bay Fair	Fatality
10/14/17	24th Street Mission	Collision with person
11/19/17	Montgomery	Collision with person
11/30/17	Balboa	Fatality
12/16//17	Powell	Fatality
2018		
2/25/18	North Concord/Martinez	Collision with person
3/8/18	MacArthur	Fatality
6/18/18	A15 Spur Track	Fatality
10/29/18	Balboa	Collision with person
12/10/18	L15	Fatality
2019		
3/31/19	19 Street	Collision with person
4/8/19	El Cerrito Del Norte	Fatality
4/22/19	Rockridge	Fatality
6/6/19	Embarcadero	Collision with person
6/25/19	Union City	Fatality
7/24/19	Lake Merritt	Collision with person
7/30/19	24th Street Mission	Collision with person
8/7/19	Montgomery	Collision with person
8/18/19	Powell	Fatality

9/11/19	Bay Fair	Collision with person
9/12/19	24th Street Mission	Fatality
9/15/19	Balboa	Collision with person
9/19/19	Powell	Fatality
10/28/19	South Hayward	Collision with person
12/31/19	Castro Valley	Fatality

*I didn't include 3/6/16 incident at MacArthur-Ashby because no one was struck by a train. Someone was on trackway but no collision. Person was held for psychiatric evaluation.

*1/22/17 Homeless male, possibly intoxicated, falls into Powell trackway but goes under lip of platform. No collision with train no injuries.

*2/9/17 Hayward – Fire Dept. confirms female wasn't hit by train, fell off platform. Sent for Psychiatric Evaluation.

Train Control Modernization Program

2020 Solutions for Congested Corridors Program

Submitted by:
San Francisco Bay Area Rapid Transit District
California Department of Transportation
Metropolitan Transportation Commission

Application Date:
July 2020

Table of Contents

Table of Figures

Table of Tables

Caltrans | METROPOLITAN TRANSPORTATION COMMISSION | BART

Mr. Mitch Weiss
Executive Director
California Transportation Commission
1120 N Street, MS-52
Sacramento, CA 95814

Re: BART Train Control Modernization Program for Congested Corridors Program Submittal

Dear Mr. Weiss:

The California Department of Transportation (Caltrans), the Metropolitan Transportation Commission (MTC), and the San Francisco Bay Area Rapid Transit District (BART) are pleased to submit this application for the BART Train Control Modernization Program (project) in San Francisco and Alameda Counties under the Senate Bill 1 (SB 1) Solutions for Congested Corridors Program (SCCP). The request is for $60 million in SCCP funding. BART will be the implementing agency with co-sponsorship from Caltrans and MTC. Any cost overruns above the allocated amounts for the project will be covered by BART, with no additional funding from the SCCP.

The project focuses on the Transbay Corridor and will replace the existing train control systems with a new communications-based train control system, as well as updating train control power cables and interlock cables within existing right-of-way. This will allow BART to achieve shorter headways on the trunk line between Daly City and Downtown Oakland. The project is included in BART's Hybrid Summary Comprehensive Multimodal Corridor Plan, which was created in accordance with the California Transportation Commission (CTC) Solutions for Congested Corridors Program guidelines and is also included in the Regional Transportation Plan, *Plan Bay Area 2040*. The Environmental Process and 30% Design phases were completed in 2017 and the Construction phase is slated to begin in 2021.

The project is part of a wide-ranging program of BART projects that will increase capacity, relieve congestion and crowding, increase transit ridership, and decrease greenhouse gas (GHG) emissions and vehicle miles traveled (VMT) by increasing the frequency and capacity of trains operating through the BART Transbay Tube. The project will increase the number of trains operating through the Transbay Tube during the peak period from 23 to 28 per hour. This, along with BART's new vehicle procurement, will enable peak

hour train lengths to be increased from an average of 8.9 cars to 10, which will maximize throughput capacity in the most congested travel corridor in the San Francisco Bay Area. Alongside the increase of corridor capacity is the complete replacement of BART's aging and obsolete equipment with a communications-based system that will allow trains to run closer together safely. With the new equipment, BART will be able to provide reliable, consistent, and safe transit services for San Francisco Bay Area residents that will result in less environmental impact and better connections to other transit services in the region.

We greatly appreciate the California Transportation Commission's (CTC) consideration of the requested investment in this project, as it is a critical component of the transportation infrastructure for the most congested corridor in the Northern California Megaregion. We believe the project is a strong candidate for SB 1 SCCP funding.

The signatures below confirm support from Caltrans, MTC, and BART, and the undersigned hereby submit for CTC's consideration the application and the Project Programming Request forms, including the project description, funding profile, and completion dates.

Sincerely,

TOKS OMISHAKIN
Director
California Department of Transportation

7-16-2020
Date

TONY TAVARES
District Director
California Department of Transportation
District 4

6-30-2020
Date

THERESE W. MCMILLAN
Executive Director
Metropolitan Transportation Commission

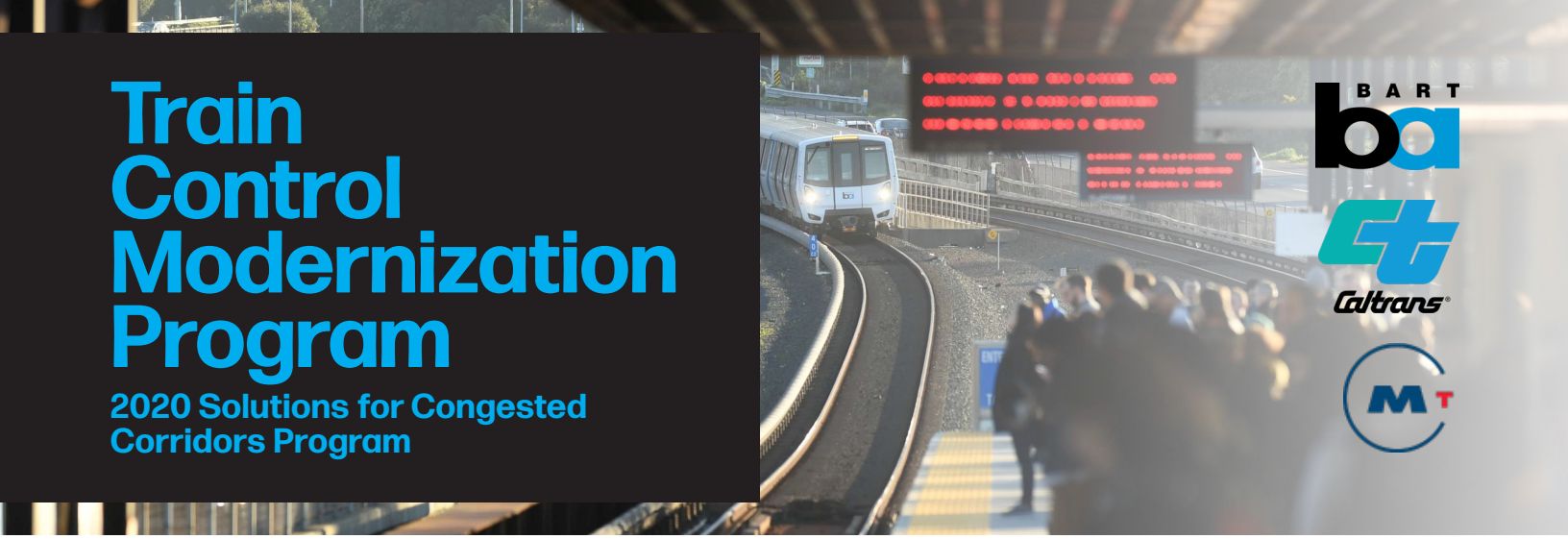
6/29/2020
Date

ROBERT POWERS
General Manager
San Francisco Bay Area Rapid Transit District

17 JUNE 2020
Date

Train Control Modernization Program

2020 Solutions for Congested Corridors Program



BART's Train Control Modernization Program (TCMP) will enable BART to increase the number of trains operating through the Bay Area's Transbay Tube. Long-term ridership trends at BART require additional capacity, which has long been recognized across the region. The TCMP will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

BART will replace the existing train control systems with a new train control system, as well as update the train control power cables and interlock cables within existing right-of-way, allowing BART to achieve shorter headways on the trunk line between Daly City and Downtown Oakland.

BART's TCMP will:

Shorten headways

Increase reliability and reduce delays

Replace aging infrastructure

TCMP Benefits

Relieve Crowding: Onboard capacity will increase significantly.

Increase Reliability: System delays attributable to the old train control system will be reduced.

Increase Average Weekday Ridership and Reduce VMT on Bay Area Roadways: Greater capacity and higher reliability will grow ridership.

Reduce GHG Emissions: Reduction in VMT leads to reduction in GHG emissions.

Sustainable Communities: Additional transit capacity will support station area community growth.

TCMP Schedule

Environmental Process complete	September 2017
30% Design complete	December 2017
Begin Construction Phase	2021
Begin increased service through Transbay Tube	2028

TCMP Cost Estimate

The TCMP is estimated to cost approximately $1.14 billion. This Solutions for Congested Corridors Program grant proposal is for the final $60 million needed to fully fund BART's TCMP through the Bay Area's Transbay Tube and the downtown Oakland segment. This funding would leverage more than $1 billion in local, State and Federal funding, including funding from BART's Measure RR passed in 2016, California's Transit and Intercity Rail Capital Program (TIRCP), and a $1.169 billion Federal Transit Administration Capital Investment Grant, of which $397 million is programed for TCMP.

C. GENERAL INFORMATION

C1. Project Overview

California Department of Transportation (Caltrans) is submitting this application to the 2020 Solutions for Congested Corridors Program (SCCP) in cooperation with the Metropolitan Transportation Commission (MTC) and the San Francisco Bay Area Rapid Transit District (BART) for **BART's Train Control Modernization Program (TCMP).**

This grant proposal is for $60 million in 2020 SCCP funds to fully fund BART's Train Control Modernization Program through the Bay Area's Transbay Corridor, the most congested portion of BART's system, connecting Oakland and San Francisco.

The TCMP will replace the existing train control systems with a new communications-based train control (CBTC) system, allowing BART to achieve the shorter headways needed to operate an increased number of regularly scheduled trains per hour on the trunk line between Daly City, downtown San Francisco, and Downtown Oakland. The new CBTC system will be based on a moving-block signaling approach throughout the existing system. The new CBTC system will be installed within or adjacent to the existing BART trackway and wayside facilities. Existing signaling equipment will be overlaid with the most current electronics, software, computer systems, and cabling.

Figure 1. CBTC through Transbay Corridor

The overall TCMP will install new raceway, power, and communication cables, new Switch Power Supply Cabinets (SPSC), conduit, and breakers at various locations throughout the BART system. New zone controllers, interlocking controllers and wayside radio transponder tags will be installed throughout the trackside alignment, train control rooms and central control facilities. Cars and maintenance vehicles will be outfitted with processor-based controllers, transponders, communication equipment and location sensors.

Installation activities will include trenching for new cabling, concrete pads for electronic equipment along the trackway, as well as new racks, communication equipment and cable trays within the wayside train control rooms and central control facilities. These activities will take place within existing BART right-of-way.

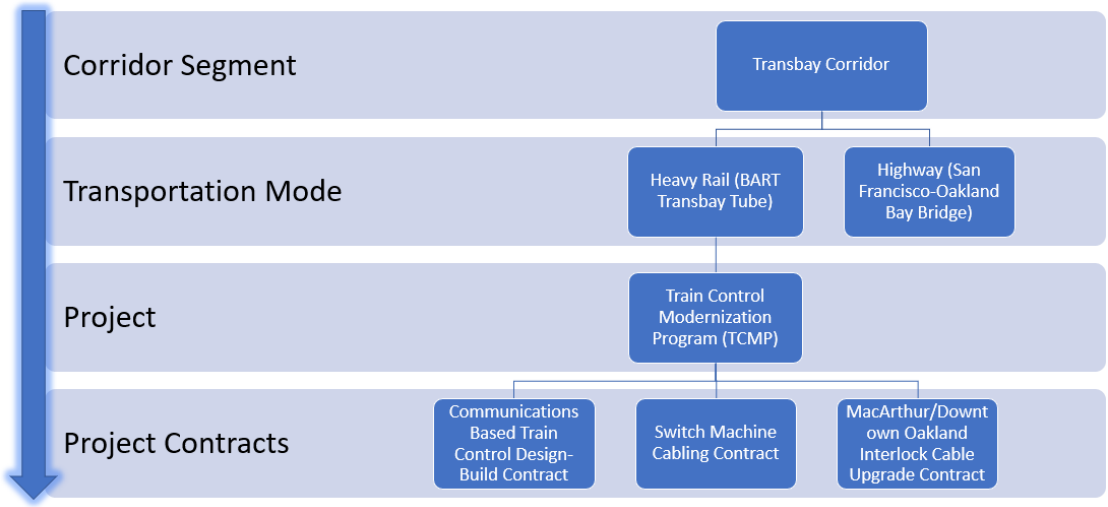
The estimated cost for BART's TCMP is approximately $1.14 billion. Matching funds will be provided by a variety of sources, including BART's Measure RR (a $3.5 billion general obligation measure passed by voters in November 2016), BART's capital allocations (operating funds transferred to support BART's capital program), a Federal Transit Administration Capital Investment Grant, and other state grant funds. The current request of $60 million in SCCP funds will fully fund the TCMP through the Transbay Corridor and enable the benefits presented in this application. The TCMP includes three contracts for implementation through the Transbay Corridor, all with independent utility. These contracts include:

- CBTC Design-Build Contract,
- Switch Machine Cabling Contract,
- MacArthur/Downtown Oakland Interlock Cable Upgrade Contract

Consistency with CTC Guidelines

While the TCMP will be implemented through the BART system, 2020 SCCP funds will be used to fully fund the TCMP through the Transbay Corridor (project segment). Per CTC's guidelines, the Transbay Corridor is considered a project segment because of the size of the overall project. With SCCP funding, the Transbay Corridor segment of the TCMP project will be fully funded. As detailed throughout this application, the segment has independent utility and benefits from implementation will relieve congestion, increase ridership, reduce greenhouse gas emissions, and decrease safety incidents in the corridor and throughout the entire region. BART's TCMP contracting strategy through the Transbay Corridor can be seen in Figure 2 below. The Transbay Corridor segment has independent utility as a segment of the entire BART system because the new train control system will be brought into use after implementation is complete in this segment. This will enable the more frequent train service to commence upon completion of the segment. The Transbay Corridor segment contains the most complicated junctions and the most heavily-used operating environments on the BART system.

Figure 2. BART's TCMP Contracting Strategy through the Transbay Corridor



2020 SCCP funds will be used to fully fund the Switch Machine Cabling and MacArthur/Downtown Oakland Interlock Cable Upgrade Contracts. Both contracts have independent utility for the operation of switches, interlockings, and other track equipment directly after installation and will result in increased reliability benefits as soon as they are implemented. The CBTC Design-Build contract, will be completed after the two cabling contracts and will benefit from the implementation of the earlier contracts but will also have independent utility, and be brought into service upon completion of installation and testing. Additionally, the TCMP contracts that will receive SCCP funding will be ready to start construction by December 31, 2023. BART will install the TCMP on other segments of the BART system following completion of the Transbay Corridor segment, but the improvements in the Transbay Corridor to achieve 28 trains per hour do not depend on those other segments being completed.

A Hybrid Summary Comprehensive Multimodal Corridor Plan (HSCMCP) has been developed and submitted with this application detailing the Transbay Corridor and the TCMP's importance as a priority project in current planning documents. This Hybrid Corridor Plan can be found on the BART TCCCP website.

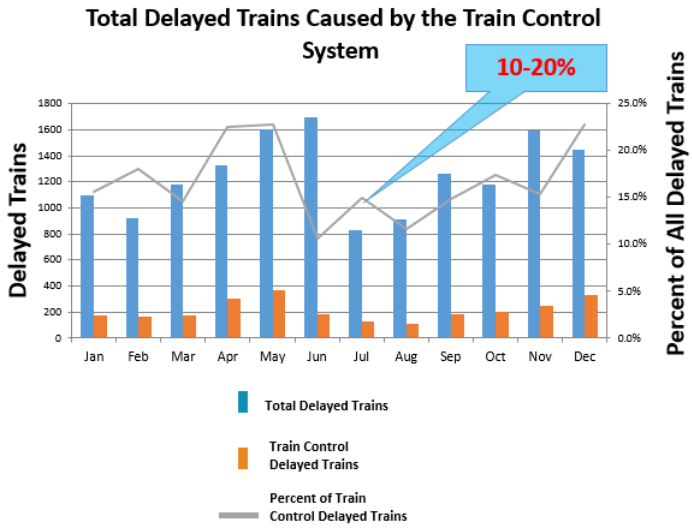
C2. Project Background

BART's Transbay Corridor Core Capacity Program (TCCCP) is a comprehensive program of projects that will increase capacity, relieve congestion and crowding, increase transit ridership, and decrease greenhouse gas (GHG) emissions and vehicle miles traveled (VMT) by increasing the frequency and capacity of trains operating on the Transbay Corridor and the entire BART system. The TCCCP will allow the number of trains operating through the Transbay Corridor to increase from 23 to 28 per hour, and peak hour train lengths to be increased from an average of 8.9 cars to 10, maximizing throughput capacity in the most heavily used and most congested travel corridor in the San Francisco Bay Area. BART's Transbay Corridor TCCCP has four major project components:

1. Train Control Modernization Program (TCMP)
2. New rail cars;
3. Additional vehicle storage at BART's Hayward Maintenance Complex (HMC); and
4. Six new traction power substations.

With this 2020 SCCP application, BART is requesting $60 million to fully fund the TCMP through the Transbay Corridor and Transbay Tube. The TCMP is the linchpin of BART's TCCCP and is key to expanding capacity as well as enhancing system reliability and safety. In 2017, between 10 and 20 percent of all delayed trains were caused by problems with the existing train control system, which is over 45 years old (See Figure 3). BART is proposing to completely replace its aging and obsolete equipment with a communications-based system which will allow trains to run closer together safely, thereby increasing system capacity. This new system is a fully-tested and operational system and is used all over the world including New York, London, Paris, Hong Kong and Denmark.

Figure 3. Total Delayed Trains Caused by the Train Control System, 2017



The four program elements of the TCCCP will allow BART to decrease headways on each of the five BART lines from 15 to 12 minutes, thus increasing frequency by up to 25 percent. Expansion of the rail car fleet will allow for BART to put into operation additional trains of 10 cars, creating additional capacity in the system. Decreased headways and increased capacity result in an estimated increased average weekday ridership of 202,972 BART riders beyond current levels (starting in 2037) and will decrease GHG emissions by at least 3.3 million metric tons of carbon dioxide equivalent ($MTCO_2e$) over a 20-year period.[1]

C3. Purpose and Need Statement

Ranked by population, the Bay Area is the fourth largest metropolitan area in the United States.[2] In 2010, the nine-county region was home to more than 7.6 million people and 3.7 million jobs. Some 300,000 jobs are in San Francisco's central business district alone, the fourth largest central business district in the country.[3] The Bay Area's economy is healthy and growing, driven in part by the technology sector that is vital to growing the nation's overall

[1] Ridership projections are included in Appendix V and GHG projects are included in the benefit-cost analysis.
[2] http://www.vitalsigns.mtc.ca.gov/population
[3] As of 2010, American Community Survey 2006-2010

economy. Downtown San Francisco is undergoing large construction projects that will increase office space and enable the city to add more jobs. By 2040, the region expects 9.5 million residents and 4.7 million jobs to be located here.[4]

This rapid growth is reflected in the increased levels of congestion on Bay Area freeways. In September 2017, the Metropolitan Transportation Commission (MTC) released its yearly analysis of Bay Area freeway congestion. The analysis showed that congestion-related delays during weekday commute periods climbed 9 percent, from 3.2 minutes per commuter in 2015 to a record average of 3.5 minutes in 2016. MTC defines "congested delay" as the time spent in traffic moving at speeds of less than 35mph. The top two most congested freeway segments in the Bay Area both feed into the highly congested Transbay Corridor across the Bay Bridge. Topping the list is afternoon peak period travel northbound and eastbound on US Highway 101 and Interstate 80 from the Interstate 280 interchange in San Francisco to the Bay Bridge's Yerba Buena Island Tunnel. Number two on the list is westbound Interstate 80 from State Route 4 in Hercules to Fremont Street in San Francisco. Congested conditions on this segment span most of the day from 5:25am to 6:55pm.

As the Bay Area's second largest transit network, BART currently operates and maintains 48 stations and 122 miles of revenue track, serving over 440,000 passengers every weekday in the counties of Alameda, Contra Costa, San Francisco, and San Mateo.[5] The Transbay Corridor is the only connection between many East Bay residential areas and jobs in San Francisco. It is the region's most heavily used transportation link, carrying more than 40,000 trips per hour in the peak, two-thirds of which are made on BART's two tracks crossing under the Bay. Virtually all the remaining trips are in cars and buses that utilize the heavily congested San Francisco-Oakland Bay Bridge (Interstate 80).

Figure 4. Average Square Feet per BART passenger on the System

On the main trunk of the BART system, from the Oakland Wye (junction in downtown Oakland where trains of all routes merge) through the Transbay Tube to Daly City, BART currently operates a maximum of 23 trains per hour in each direction. Train lengths vary, but currently average 8.9 cars per train in the peak. Between the East Bay and San Francisco, peak hour trains are crowded, and ridership has been growing. The system is expanding as the San Francisco Core continues to attract development, and with an extension into Santa Clara County that opened on June 13, 2020, tens of thousands of new riders are expected in the coming years.

[4] Plan Bay Area 2040, http://2040.planbayarea.org/sites/default/files/2017-07/Regional%20Forecast%20Supplemental%20%20Report_Final_7-2017_0.pdf

[5] https://www.bart.gov/sites/default/files/docs/Role%20of%20BART%20in%20Region%20-%20Final%20Web%20Oct%202016_1.pdf

BART's existing Transbay Corridor ridership exceeds capacity in the peak between the Embarcadero station in San Francisco and the Downtown Berkeley, Rockridge, and Bay Fair stations in the East Bay. Within this corridor, riders in the peak hour currently have an average of 5.2 square feet of space each, which is an uncomfortable level for passengers (Figure 4). The Transit Capacity and Quality of Service Manual published through the Transit Cooperative Research Program (TCRP) establishes 5.4 square feet of space per passenger as a comfortable loading level on U.S. rail transit systems. [6] The Federal Transit Administration (FTA) has adopted this as the threshold level of crowding for funding Core Capacity projects with Capital Investment Grant funds.

The most crowded part of the BART corridor is the five-mile-long Transbay Tube between the Embarcadero and West Oakland stations, where the average rider has just 4.7 square feet of space during the morning peak, far less than the FTA threshold. Current BART riders endure uncomfortably crowded conditions, while some commuters choose other modes to avoid the crush-load conditions on some BART trains. BART's ability to increase ridership – and the region's ability to steer growth to places served by transit – depend upon additional BART capacity in the Transbay Corridor.

The Train Control Modernization Program will reduce congestion throughout the Transbay Corridor, and more specifically the Transbay Tube, by replacing the existing and outdated train control systems with a new communications-based train control system, associated power cables, and train control raceways. These upgrades to the 45-year old train control system will reduce the headways between BART trains, increase train lengths, and allow the agency to operate more regularly scheduled trains per hour.

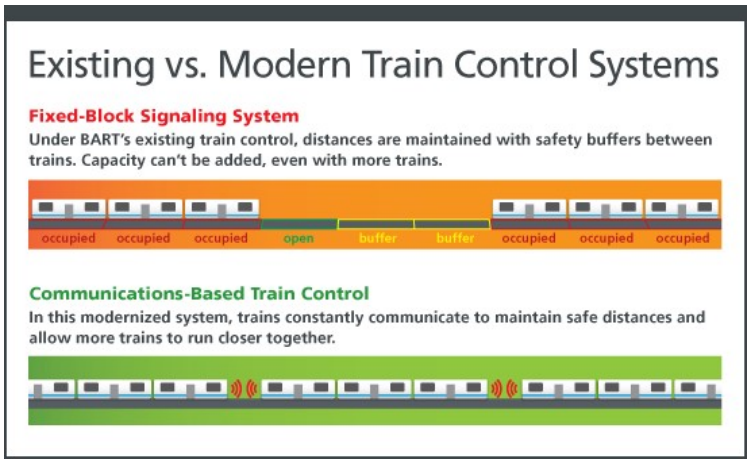
C4. Project Scope

BART will replace the existing train control systems with a new communications-based train control system, allowing BART to achieve the shorter headways needed to operate more regularly scheduled trains per hour on the trunk line, through the Transbay Tube, and between Daly City and the Oakland Wye. The Oakland Wye is the segment of the BART network between the West Oakland Station, the 12th Street/City Center Station and the Lake Merritt Station, where trains coming from the Richmond, Pittsburg/Bay Point, Dublin/Pleasanton and Warm Springs lines converge before traveling in the westbound direction through the Transbay Tube to San Francisco and Daly City.

BART will install new surface mounted train control raceways and associated cables to new Switch Power Supply Cabinets (SPSC) and associated interlock switches in 26 locations. This portion of the TCMP also includes installation of new conduit, power cable, and new breakers between Station House Power to Train Control rooms in 22 locations. The TCMP also includes installation of raceway, power, and communication cables from the MacArthur Train Control Room to wayside Interlock Switches for multiple locations.

[6] TCRP Report 165

Figure 5. Comparison of Existing vs. Modern Train Control Systems



The new CBTC system will be based on a moving-block signaling approach throughout the existing system. The new CBTC system will be installed within or adjacent to the existing BART trackway and wayside facilities. Existing signaling equipment will be overlaid with the most current electronics, software, computer systems, and cabling. New zone controllers, interlocking controllers and wayside radio transponder tags will be installed throughout the trackside alignment, train control rooms and central control facilities. Cars and maintenance vehicles will be outfitted with processor-based controllers, transponders, communication equipment and location sensors.

Installation activities for the CBTC system will include trenching for new cabling, concrete pads for electronic equipment along the trackway, as well as new racks, servers, computers, communication equipment and cable trays within the wayside train control rooms and central control facilities. This replacement of over 45-year-old equipment will further improve reliability of the system. These activities will take place within existing BART right-of-way.

C5. Project Benefits

BART's implementation of the TCMP furthers the following five objectives of the Solutions for Congested Corridor Program as described in the following sections of this application:

- ***Reducing Congestion:*** the proposed improvement will relieve congestion in the Transbay Corridor
- ***Safety:*** address safety issues and concerns in the corridor by reducing VMT, including health impacts from reduced GHG emission
- ***Economic Development:*** supports economic development and access to employment
- ***Air Quality and Greenhouse Gases:*** reduce greenhouse gas emissions and criteria pollutants and advance the State's air quality and climate goals
- ***Efficient Land Use:*** supports transportation-efficient land use principles including policies that support transit-oriented development

For detailed description of these and other benefits, see Section E. Evaluation Criteria and Appendix II. Performance Indicators and Measures.

C6. Project Location

The TCMP will add much needed capacity and congestion relief to the Transbay Corridor, which includes the highly congested Bay Bridge (Interstate 80) which carries car, truck, and transit traffic, as well as the Transbay Tube which carries BART trains. In addition to the Interstate 80 corridor, the BART system also provides a capacity relief alternative to the U.S. Route 101, State Route 24 and Interstate 880 corridors.

See Project Corridor Section and Figure 7 below for a map of the BART system and the Transbay Corridor (outlined by a dotted orange line), as well as more information on project location.

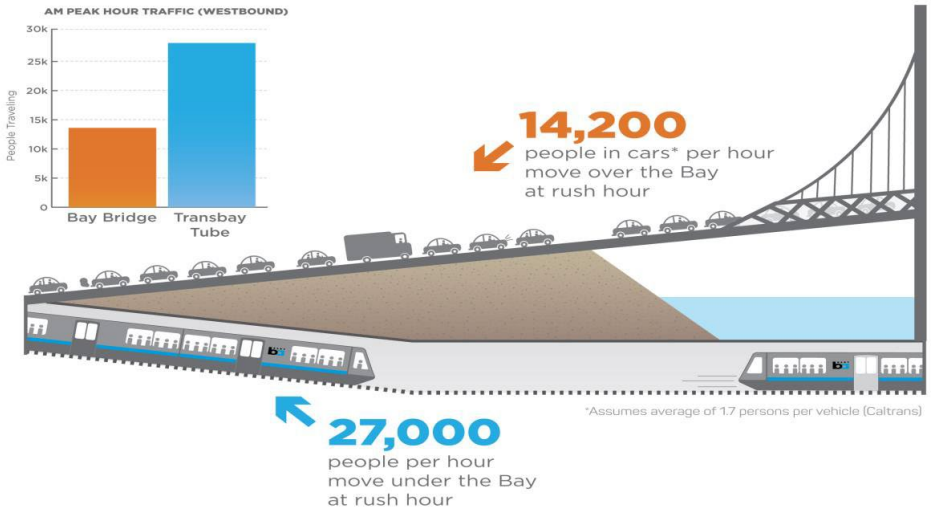
C7. Project Priority

Caltrans priority 2 of 10

C8. Project Corridor

The Transbay Corridor is the only connection between many East Bay residential areas and jobs in San Francisco. It is the region's most heavily used transportation link, carrying more than 40,000 trips per hour in the peak, two-thirds of which are made on BART's two tracks crossing under the Bay. Virtually all the remaining trips are in cars and buses that utilize the heavily congested San Francisco-Oakland Bay Bridge (Interstate 80).

Figure 6. BART's Peak Hour Transbay Market Share

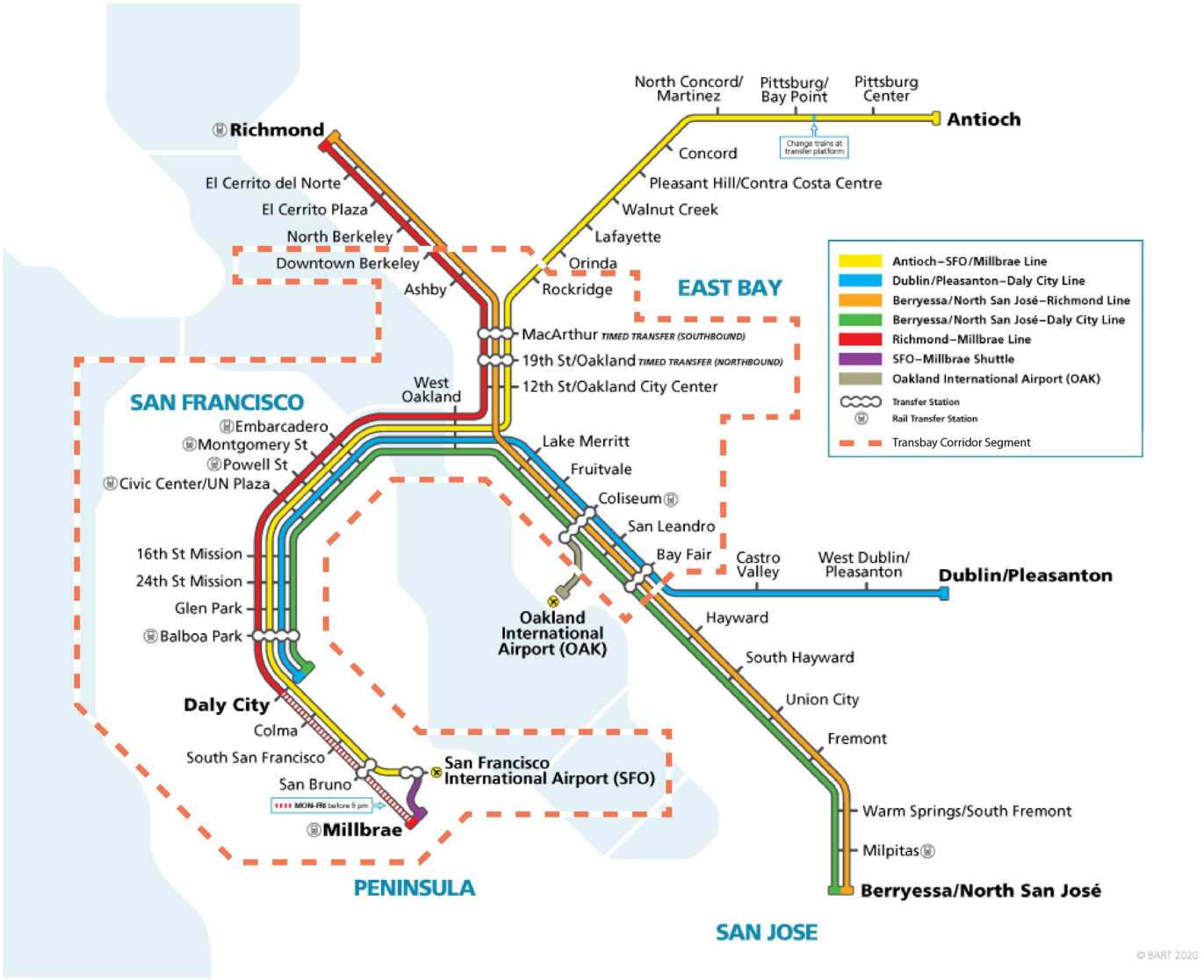


On the main trunk of the BART system, from the Oakland Wye (junction in downtown Oakland where trains of all routes merge) through the Transbay Tube to Daly City, BART currently operates a maximum of 23 trains per hour in each direction. Train lengths vary, but currently average 8.9 cars per train in the peak. Between the East Bay and San Francisco, peak hour trains are crowded, and ridership has been growing. As the system expands – with a recently-completed extension into Santa Clara County and a recent eastern Contra Costa opening – and as the core continues to attract development, tens of thousands of new riders are expected.

This SCCP application includes implementation of the TCMP through the Transbay Corridor (segment). Figure 7 shows a map of the current BART system with the Transbay Corridor segment outline by a dotted orange line. This segment has independent utility in that once TCMP is implemented through this segment, BART will be able to achieve the benefits of increasing from a maximum of 23 trains per hour to 28 trains per hour service through the Transbay Corridor. Beyond this project segment (outside the scope of this grant application), BART will implement TCMP throughout the remaining corridors of the BART system and will then be able to operate up to 30 trains per hour through the Transbay Tube.

As noted previously, a Hybrid Summary Comprehensive Multimodal Corridor Plan was developed per CTC guidelines for this SCCP application.

Figure 7: BART System Map, Transbay Corridor Segment Outlined



C9. Project Consideration for Reversible Lanes

Section is not applicable.

C10. Project Consistency with Regional Transportation Plan & Sustainable Communities Strategy

The Metropolitan Transportation Commission (MTC) adopted an update to its Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Plan Bay Area 2040, on July 26, 2017. The update includes the capital projects and service assumptions that make up the Transbay Corridor Core Capacity Program. Hence, the TCCCP and the TCMP are consistent with the Bay Area's RTP/SCS (Plan Bay Area 2040).

C11. Anticipated Impact of the Safer Affordable Fuel-Efficient Vehicles (SAFE) Rule on Project

Caltrans anticipates no impact on the TCMP project from the Safer Affordance Fuel-Efficient Vehicles Rule.

D. SCREENING CRITERIA

D1. Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS)

As stated previously, The Metropolitan Transportation Commission (MTC) MTC adopted an update to its Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Plan Bay Area 2040, on July 26, 2017. The update includes the capital projects and service assumptions that make up the Transbay Corridor Core Capacity Program. Hence, the TCCCP is consistent with the Bay Area's Sustainable Communities Strategy RTP/SCS.

Figure 8: Plan Bay Area 2040 Goals

Goal		Target*	
	Climate Protection	1	Reduce per-capita CO_2 emissions
	Adequate Housing	2	House the region's population
	Healthy and Safe Communities	3	Reduce adverse health impacts
	Open Space and Agricultural Preservation	4	Direct development within urban footprint
	Equitable Access	5	Decrease share of lower-income households' budgets spent on housing and transportation
		6	Increase share of affordable housing
		7	Do not increase share of households at risk of displacement
	Economic Vitality	8	Increase share of jobs accessible in congested conditions
		9	Increase jobs in middle-wage industries
		10	Reduce per-capita delay on freight network
	Transportation System Effectiveness	11	Increase non-auto mode share
		12	Reduce vehicle operating and maintenance costs due to pavement conditions
		13	Reduce per-rider transit delay due to aged infrastructure

* Complete target language as adopted by the Commission and ABAG Executive Board can be found at: http://planbayarea.org/the-plan/plan-details/goals-and-targets. Target language shown above is summarized for brevity.

Environment Equity Economy

The TCCCP and the TCMP meet the goals of Plan Bay Area in specific and measurable ways, including:

- Reduction of CO2 emissions (Climate Protection)
- Reduce adverse health impacts (Healthy and Safe Communities)
- Increase share of jobs accessible in congested conditions (Economic Vitality)
- Increase non-auto mode share (Transportation System Effectiveness)
- Reduce vehicle O&M costs due to pavement conditions (Transportation System Effectiveness)

Beyond these connections to the TCCCP and TCMP, BART is also committed to the following goals through their Transit Oriented Development guidelines, as discussed more in this application:

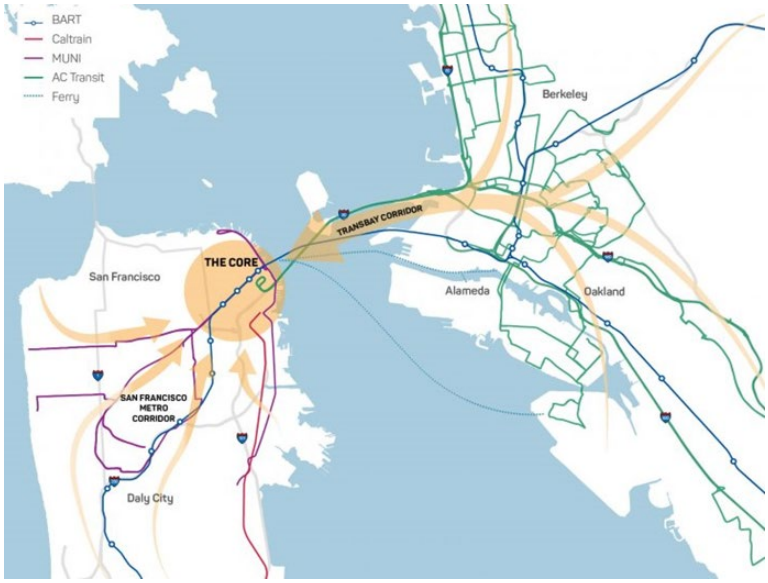
- House the region's population (Adequate Housing)
- Direct development within urban footprint (Open Space and Agricultural Preservation)
- Increase share of affordable housing (Equitable Access)

D2. Corridor Plan

The California Transportation Commission's (CTC's) 2018 Comprehensive Multimodal Corridor Plan guidelines, in recognition of the length of time needed to complete a comprehensive multimodal plan, have allowed agencies to conduct an integrated analysis of existing plans within a corridor, also known as a "Hybrid Plan" to define the corridor. Streets and Highways Code 2391 requires that Solutions for Congested Corridors Program (SCCP) funding "be

available for projects that make specific performance improvements and are part of a comprehensive corridor plan designed to reduce congestion in highly traveled corridors by providing more transportation choices for residents, commuters, and visitors to the area of the corridor while preserving the character of the local community and creating opportunities for neighborhood enhancement projects."

Figure 9. MTC's Bay Area Core Capacity Transit Study Area



BART, as a part of the agency's SCCP funding application for the TCMP, has created a Hybrid Plan, bringing together the Bay Area Core Capacity Transit Study and the Horizon Crossings Perspective Paper. In both plans, the TCMP is described as a priority program, one that is necessary to increase the capacity of BART trains in order to meet the growing demand within the Transbay Corridor. The plan begins with an overview of the Transbay Corridor's capacity needs as well as current and future demand. The TCMP, the lynchpin of BART's Transbay Corridor Core Capacity Program, has been identified by BART as a method to increase capacity through the Transbay Corridor and the BART system. Both the Bay Area Core Capacity Transit Study (BACCTS), which focuses on short- and medium-term investments, and Crossings paper, which focuses on long-term investments and needs, highlight the necessity of the TCMP as a cost-effective investment to increase transit capacity through the Transbay Corridor.

The Hybrid Plan summarizes the guiding principles, multimodal considerations and impacts, community and stakeholder engagement, and consistency with other planning activities at each level of government for both component plans. For the short- and medium-term, the focus of the BACCTS is on increasing transit capacity and reliability by implementing the TCMP and adding new rail cars to the BART system, while also expanding bus and ferry routes. In the long-term, the focus is on increasing transit capacity and ridership through a new BART Transbay crossing. Both studies anticipate large impacts on demand, and the ability to meet future demand if the right capacity investments are taken. Finally, the outcomes and recommended investments of both studies is discussed.

This Transbay Corridor Hybrid Summary Comprehensive Multimodal Plan is located on BART's TCCCP website.

D3. Environmental and Community Impacts

BART, as a recipient of federal funds, is required by the Federal Transit Authority (FTA) to comply with Title VI of the Civil Rights Act of 1964 and its amendments (Act). Title VI of the Civil Rights Act of 1964 requires that no person in the United States, on the grounds of race, color or national original be excluded from, be denied the benefits of, or be subjected to discrimination, under any program or activity receiving federal financial assistance. Presidential Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" addresses environmental justice in minority and low-income populations. Presidential Executive Order 13166 "Improving Access to Services for Persons with Limited English Proficiency" addresses services to those individuals with Limited English Proficiency (LEP).

FTA Circular 4702.1B, dated October 1, 2012, entitled *Title VI Requirements and Guidelines for Federal Transit Administration Recipients* (Title VI Circular) and FTA Circular 4703.1, dated August 15, 2012, entitled *Environmental Justice Policy Guidance for Federal Transit Administration Recipients* (EJ Circular), require that federal funding recipients, such as BART, review its transportation decisions to ensure equity in the transportation decision making process and to ensure that decisions are not made on the basis of race, color, national origin or socioeconomic status.

The existing BART system covers large portions of the Bay Area and bisects several communities, including designated minority and low-income populations. The TCMP equipment in operation will not make any noise, and it will be largely invisible to the public. The TCMP equipment will be entirely in existing transportation right-of-way and existing structures. No impacts from installation or operation of TCMP equipment are anticipated. Therefore, no disproportionately high and adverse effects are anticipated for any surrounding communities, including Title VI/EJ communities.

Per page 11 of the final categorical exclusion for the entire TCCCP, the TCMP has no physical features which will lead to environmental impacts.

The TCMP has categorical exclusion (CE) for NEPA and statutory exemption (SE) for CEQA. These documents are available on BART's TCCCP website.

E. EVALUATION CRITERIA

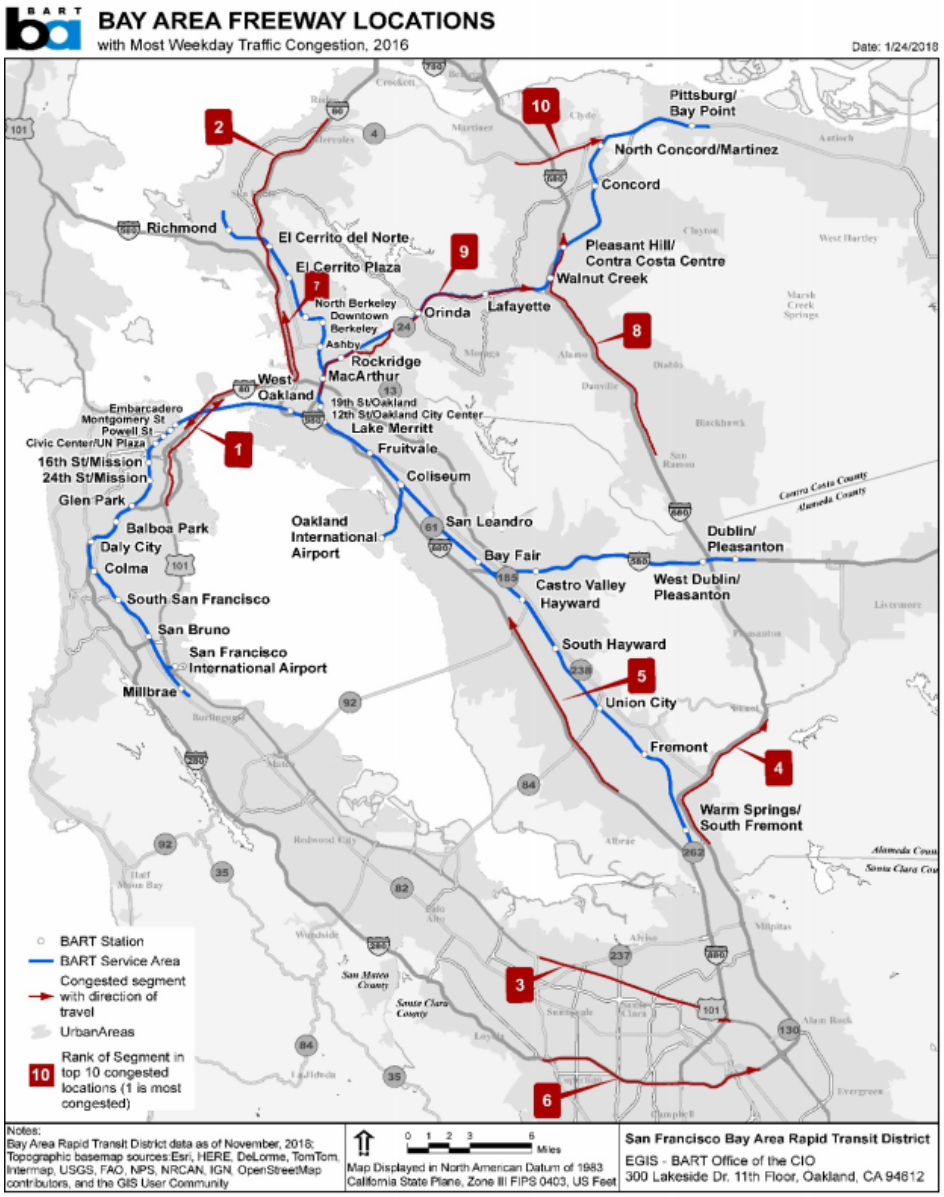
E1. Primary Evaluation Criteria: Congestion

The TCCCP will address the issue of congestion in the highly traveled, highly congested Transbay Corridor, and multiple state highway corridors that feed into the Transbay Corridor. The program meets the Solutions Congested Corridors Program objectives of reducing delay in the corridor, increasing person throughput, expanding mode choices, improving reliability, and reducing vehicle miles traveled by offering expanded transit capacity as an alternative to congested roadways.

Current Corridor Congestion

The Transbay Corridor is the most congested freeway corridor in the Bay Area. The Metropolitan Transportation Commission (MTC) defines "congested delay" as the time spent in traffic moving at speeds of less than 35mph. According to this metric, the freeway segment with the most delay in the entire Bay Area is afternoon peak period traffic on northbound and eastbound U.S. 101 and Interstate 80 (I-80), leaving San Francisco across the Bay Bridge. The freeway segment with the second highest amount of delay is travel along westbound I-80 across the Bay Bridge into San Francisco. Congested conditions along this segment span from 5:25am to 6:55pm. It is the only segment among the region's 10 most congested corridors to include a morning commute and is also the only segment to not have a mid-day break in congested conditions.

Figure 10. Bay Area Freeway Locations with Most Traffic Congestion, 2016



BART Congestion

BART's Transbay Corridor ridership exceeds capacity in the peak between the Embarcadero station in San Francisco and the Downtown Berkeley, Rockridge, and Bay Fair stations in the East Bay. Within this corridor, riders in the peak hour have an average of 5.2 square feet of space each, which is an uncomfortable level for passengers. The Transit Capacity and Quality of Service Manual published through the TCRP establishes 5.4 square feet of space per passenger as a comfortable loading level on U.S. rail transit systems. [7] The Federal Transit Administration (FTA) has adopted this as the threshold level of crowding for funding Core Capacity projects with Capital Investment Grant funds.

The most crowded part of the BART corridor is the five-mile-long Transbay Tube between the Embarcadero and West Oakland stations, where the average rider has just 4.7 square feet of space, far less than the FTA threshold. Current BART riders endure uncomfortably crowded conditions, while some commuters choose other modes to avoid the

[7] TCRP Report 165

crush-load conditions on some BART trains. BART's ability to increase ridership – and the region's ability to steer growth to places served by transit – depend upon additional BART capacity in the Transbay Corridor.

The Transbay Corridor is also the most congested segment of the BART system (see Figure 4). Train crowding conditions during peak periods on this corridor are extreme. Errors in BART's aging train control system are a major cause of train delay. BART's existing train control system was not built to handle BART's current ridership demands. The current system can safely accommodate no more than one train every 2.5 minutes. The new train control system would allow trains to safely run closer together, which will decrease delays and is needed in order to run more frequent service between Oakland and San Francisco. Overall, the TCMP will reduce the risk of severe or recurrent delays for the system's growing number of riders.

Impacts of Existing Condition

According to BART operations data, there were 647 delay events in 2017 that were caused by issues with the train control – accounting for a total of 41,050 minutes (684 hours) of delay. Considering the average train load for each one of these delayed trains, the person minutes of delay in 2017 related to train control issues was nearly 8.7 million minutes, or 144,700 total person hours of delay. The TCMP will drastically reduce the amount of delays related to train control, thus saving thousands of hours of person delay per year, benefiting riders and the overall economy of the region.

Table 1. BART Delay Events, 2017

Month	Events	Minutes of Delay	Average Train Load (riders)	Person Minutes of Delay
January 2017	51	2,949	200	592,296
February 2017	48	5,261	218	1,149,969
March 2017	51	2,383	215	512,796
April 2017	57	2,717	211	573,660
May 2017	56	2,340	214	502,038
June 2017	63	2,190	214	470,456
July 2017	48	2,027	211	427,946
August 2017	48	6,197	214	1,330,199
September 2017	68	3,571	217	776,219
October 2017	67	3,050	216	660,999
November 2017	36	3,147	209	660,725
December 2017	54	5,218	196	1,023,292
2017 Total	647 Events	41,050 Total Minutes of Delay		8,680,600 Person Minutes of Delay

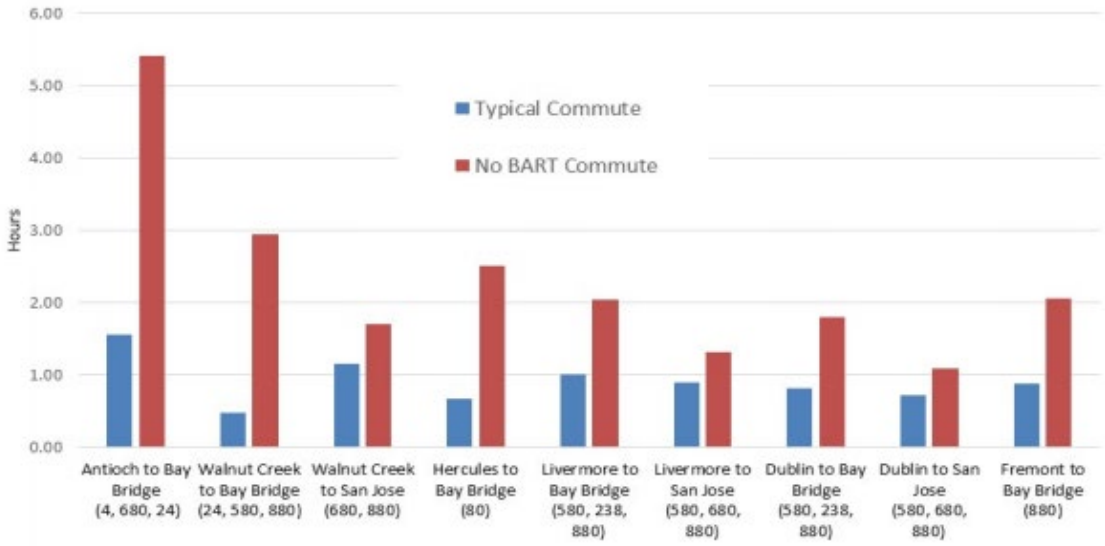
No-Build Environment

Freeway Corridor Impacts

As seen in Figure 10, the BART system parallels many freeway corridors throughout the Bay Area including I-80, U.S. 101, I-580, I-680, I-880, and SR-24. Without BART, freeway congestion would be even worse. An analysis was conducted to evaluate the impact of BART on freeway travel time and congestion using the MTC travel demand model. Figure 11 shows the results of this analysis. The chart shows typical commute times for various travel corridors throughout the Bay Area under conditions both with and without BART. Without BART, travel times per segment would increase between 25 and 500 percent and between 20 minutes to three and a half hours. This analysis

demonstrates that BART is a vital component to the Bay Area transportation network and is critical to addressing issues of delay and congestion throughout the region.

Figure 11. Travel Time Changes, Current and without BART



Source: Cambridge Systematics, 2016. Estimates developed using the MTC travel demand model 2010 base year with and without BART and adjusted to match 2016 conditions. Assumes all BART riders would drive on parallel freeways if BART were not available. Assumes 50% of Bay Bridge users would use other bridges or stay home.

On the BART System, without increased capacity from the TCMP and overall TCCCP implementation, ridership will stay constant, not allowing for needed growth on the system.

Other Corridor Improvements

Replacement of the eastern span of the San Francisco-Oakland Bay Bridge (SFOBB) was completed in 2013, which included replacing the seismically unsound portion of the Bay Bridge with a new self-anchored suspension bridge and viaducts. Additionally, BART is currently completing the Transbay Tube Internal Retrofit Project, which involves installation of a steel liner inside the tube and the installation of a new water pump system.

Other highway-focused improvements planned for the SFOBB corridor include Bay Bridge Forward, which will increase person throughout through completing HOV improvements, transit core improvements, and shared mobility services by investing $40 million in One Bay Area Grant (OBAG) 2 funds to address these capacity constraints.

BART is currently in the early planning stages for building a Second Crossing within the Transbay Corridor. However, this project is not expected to begin construction for years. The Transbay Corridor needs additional capacity in the short term, capacity that the TCMP implementation will provide.

Impact of Not Completing Corridor

As described in the sections above, the following impacts will be seen if the TCMP is not implemented in the Transbay Tube:

- BART ridership in the Transbay Tube will stagnate, as additional system capacity will not be realized from increased frequencies and train lengths.
- Significant delays due to the current train control system will continue, making it harder for riders to rely on the BART system.

- Current drivers on the San Francisco – Oakland Bay Bridge may not be attracted to choose BART for some Transbay trips.
- Current BART riders through the Transbay Tube may choose to drive the San Francisco – Oakland Bay Bridge due to crowded conditions on BART, adding to the congestion already seen at peak periods.
- Economic growth in the corridor may not meet projections due to capacity limitations on BART.

Other Corridor Issues

The Transbay Corridor's major issue is congestion, both on the San Francisco – Oakland Bay Bridge and through the BART Transbay Tube. Congestion further exacerbates other existing issues in the corridor such as safety, air quality, and quality of life. From 2014 to 2019 (past 5 years), nearly 3,000 traffic crashes resulting in fatalities, injuries, or property damage were reported on the Bay Bridge alone. Every year, hundreds of lives are tragically lost on our region's highways, arterials and local streets. Compared to these roadway conditions, BART is a drastically safer travel option. In 2016, BART experienced only 4.5 station incidents per million patrons and 0.9 vehicle incidents per million patrons.[8] With almost 270,000 vehicles traveling on the Bay Bridge every day, the Transbay Corridor significantly adds to the pollution and greenhouse gas emissions of the Bay Area, affecting the health and well-being of many at risk groups. Other than the health issues, congestion in the Transbay Corridor reduces the quality of life for residents in the area by significantly increasing the time spent traveling to employment and recreational centers throughout the region.

Proposed Solution

As discussed previously, the Transbay Corridor Core Capacity Program includes four elements:

- The Train Control Modernization Program (TCMP), which will allow trains to be spaced more closely together, reducing headways. (2020 SCCP Scope and lynchpin of the TCCCP)
- Acquisition of new rail cars, allowing for increased capacity per train.
- Construction of a new railcar storage yard at Hayward Maintenance Complex Phase 2, which will create storage yard capacity for 250 rail cars.
- Six new traction power substations, supplementing BART's existing traction power in those places where there is not enough power to operate the additional capacity.

The TCCCP will relieve current levels of crowding during the peak while creating the opportunity for ridership growth. The TCMP will increase headways and allow trains running through the Transbay Corridor to be 10 car trains. Based on current ridership, the space per passenger in the corridor will be increased from the current average of 5.2 square feet to a more comfortable 7.6 square feet. This additional space will allow for ridership growth on the BART system, as well as reduce congestion on the San Francisco – Oakland Bay Bridge.

Incorporation of Multiple Modes

The transit mode share on the Transbay Corridor is the highest in the Bay Area, particularly during peak periods. Seventy-five percent of morning peak hour trips in the corridor are on transit, which includes BART, AC Transit buses, and WETA ferries. BART carries most of these trips. Two-thirds of all peak hour trips in the corridor are on BART (see Figure 6). The TCCCP will further increase BART capacity, shifting an even larger share of peak period travel to transit.

BART provides the backbone transit system throughout the Bay Area. Every BART station provides local bus connections, with some BART stations providing major intermodal transit connections to a substantial number of

[8] BART Fiscal Year 2017 Short Range Transit Plan and Capital Improvement Program

other transit services such as Caltrain, MUNI light rail and bus, AC Transit, SamTrans, Golden Gate Transit, ACE commuter rail, WETA ferries, and bus services to and from Solano and Napa counties.

Because the Core Capacity Program is expected to increase ridership throughout the system, it will have a positive impact on the ridership numbers of connecting transit services. As part of the ridership modeling included in this application, combined ridership on multiple Bay Area transit systems will increase by 65,800 riders annually because of the Core Capacity Program.

The ridership changes from other Bay Area transit systems, because of the Core Capacity Program, were projected based on the Metropolitan Transportation Commission's (MTC's) Travel Model One forecast. Travel Model One is an Activity Based Model (ABM) covering the nine-county San Francisco Bay Area, which is used to simulate travelers' reactions to transportation projects and policies in the region, as well as to quantify the impact of cumulative individual decisions on the Bay Area's transportation networks.

For a detailed methodology and results of this Ridership Analysis, see Appendix V.

Minimize VMT, Maximize Throughput

The TCMP is expected to increase ridership on the BART system by increasing service frequency and allowing increased train lengths (with additional cars) throughout the BART system and specifically the Transbay Corridor**.** The ridership methodology described in Appendix V details how the following increases in ridership were developed, as well as constraints on ridership increases. Because the full Core Capacity Program is estimated to be completed in 2030 (rather than 2028 for the Transbay Corridor TCMP segment) the ridership benefits described below will begin to accrue even earlier than the ridership modeling estimates, meaning the ridership benefits described in this application are considered conservative.

To predict ridership growth, the June 2016 level of 435,973 riders per day was established as the constrained baseline.

Table 2. Capacity Constrained Weekday Ridership Increase

Program Milestone	Date	Weekday Capacity Constrained Ridership	BART Ridership Growth from Program
Base Ridership – At Capacity	2016	435,973	
Core Capacity Complete	2030		
Year 1 of Core Capacity Implemented	2031	587,145	151,172
Year Final of Core Capacity Implemented (20 years per Cal B/C)	2050	638,945	202,972

Completion of the Core Capacity Program will allow BART to increase the peak hour capacity through Transbay Corridor by 45 percent during the peak period. Assuming current ridership trends continue, the capacity constrained ridership after the completion of the Core Capacity Program will be about 45 percent higher than the current capacity constrained ridership. This leads to an average weekday systemwide capacity constrained ridership of 638,945 with the Core Capacity Program. This is an increase of 202,972 average weekday riders due to increased capacity alone. Under the most likely ridership increase scenario, which is based on increased frequency, shown in Appendix V. Ridership Modeling and Methodology, this 638,945-capacity limit is expected to be reached in 2037.

Based on this ridership increase on the BART system, the Cal B/C model used to estimate benefits for this SCCP application shows that these ridership increases will reduce regional VMT by an average of 535 million miles per year. **Over the 20-year life of the project, this equates to over 10 billion vehicle miles reduced as result of the Core Capacity Program.**

Balanced Solution

As discussed in future sections of this SCCP application, implementation of the TCMP will balance multiple benefits, including:

- Increased capacity through the Transbay Corridor, allowing for increased BART ridership
- Reduced VMT on Bay Area Highways from increased BART ridership
- Decreased GHG emissions stemming from decreased VMT
- More reliable connections to economic centers, like downtown San Francisco and downtown Oakland, that spurs community development along BART corridor, focused on transit-oriented development (TOD)

Benefits of Solution

As discussed previously, the TCMP will provide several benefits for the Transbay Corridor including reducing congestion on the BART line, reducing VMT on Bay Area Highways by providing a reliable alternative mode of transportation with BART, decreasing GHG emissions from reduced VMT, increased reliability, and economic and community development that arises from more reliable and less congested transportation. Additionally, because the TCMP is a train control project, it will have very little impact on the existing lived environment, providing an excellent, low-impact, short-term solution to easing congestion in the Transbay Corridor.

Other Considerations

As discussed above, MTC and other agencies including BART are evaluating the potential for another Transbay Crossing, including a second Transbay Tube. However, this solution is decades in the making, with time horizons extending as far as 2080. Consequently, there are limited options available to Caltrans and BART to increase capacity in the multi-modal Transbay Corridor. The TCCCP, and specifically the TCMP, was studied and determined to be the only short-term solution to increasing capacity.

E2. Secondary Evaluation Criteria

The TCMP will provide safety, accessibility, economic, air quality, and land use in the project corridor and throughout the bay area region.

Safety

BART's existing train control system, originally built over 45 years ago, is reaching the end of its useful life. The new train control system implemented through the TCMP will be a proven technology, ensuring that BART can operate more trains closer together, while maintaining the highest level of safety in train operation. Many systems worldwide have now converted to CBTC, such as the London Underground, the Paris Metro, portions of the New York City subway, and others, and BART will be following this path using fully tested and certified technology.

From 2014 to 2019 (past 5 years), nearly 3,000 traffic crashes resulting in fatalities, injuries, or property damage were reported on the Bay Bridge alone. Fortunately, less than 1% (8) of these crashes resulted in fatalities. However, every year, hundreds of lives are tragically lost on our region's highways, arterials and local streets. Compared to these roadway conditions, BART is a drastically safer travel option. In 2016, BART experienced only 4.5 station incidents per

million patrons and 0.9 vehicle incidents per million patrons.[9] Station incidents and vehicle incidents are all incidents that meet the FTA criteria as "reportable" (mostly injuries and illnesses) and occur either in BART station areas or on BART train cars.

Table 3. Accidents Reported on Bay Bridge, 2014 – 2019

Accident Types	Crashes
Fatal Crashes	8
Injury Crashes	1,049
Property Damage Only Crashes	1,927
TOTAL	2,984

For a list of BART Fatalities/Collisions from 2013 to 2019, please see Appendix VIII of this application.

Increased Safety

It is estimated that the implementation of TCMP through the Transbay Corridor will lead to over 10 billion VMT reduced over 20 years. This reduction in VMT will also reduce the amount of vehicle crashes, as fewer miles will be traveled on Bay Area roadways. Table 4 shows the immense safety and economic effects that the Transbay Corridor Core Capacity Program will have on the surrounding roadways over 20 years.

Table 4. Vehicle Crash Reduction, 20-year analysis

Accident Types	Avoided Crashes
Fatal Crashes	64.3
Injury Crashes	3,105.5
Property Damage Only Crashes	5,889.8
TOTAL	9,060

The benefit cost-analysis completed as part of this application shows that this reduction in safety incidents will yield an itemized benefit of $550 million over the 20-year analysis.

Other Safety Measures

Implementation of the overall TCCCP will also improve safety on BART platforms. During evening peak periods, the platforms at the Embarcadero and Montgomery stations in downtown San Francisco often become extremely crowded, particularly when there is a service disruption. Extreme crowding on the platforms can lead to unsafe conditions when people are too close to the platform edge. The TCMP will enable more frequent trains, which will help to relieve crowding and improve safety on BART platforms.

Accessibility

The TCMP will increase accessibility to multimodal choices by enhancing the reliability of the BART system. As described previously, the BART system (specifically in the Transbay Tube) suffers from reliability issues because of the current train control system. Implementation of the TCMP will allow riders to better rely on BART to get them to their destinations with more certainty on timing; making work, education, retail, and other trips easier on the BART system.

[9] BART Fiscal Year 2017 Short Range Transit Plan and Capital Improvement Program

Access to Multimodal Choices

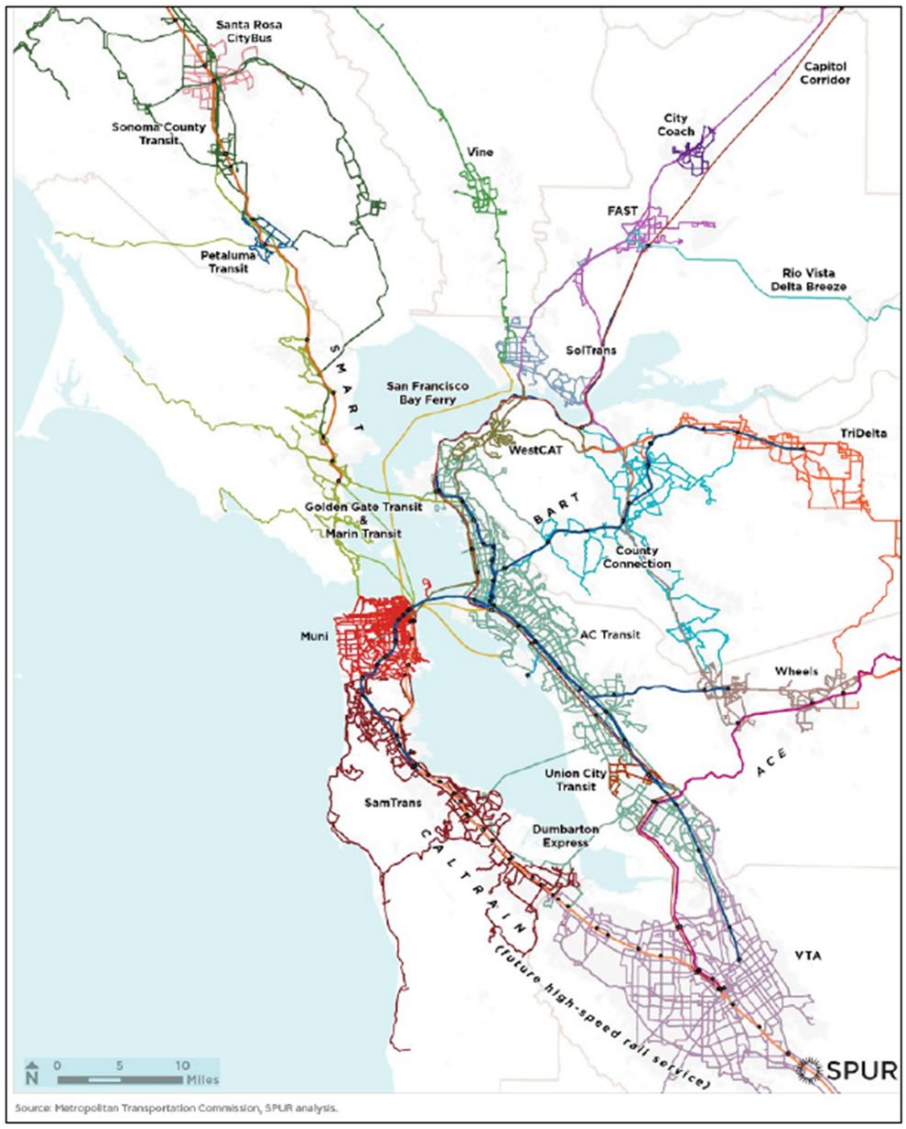
BART provides the backbone transit system throughout the core of the Bay Area. Every BART station provides local bus connections, with some BART stations providing major intermodal transit connections to a substantial number of other transit services such as Caltrain, MUNI light rail and bus, AC Transit, SamTrans, Golden Gate Transit, ACE commuter rail, WETA ferries, and bus services to and from Solano and Napa counties.

Capitol Corridor, which provides rail service from the Sacramento Valley to San Jose, connects with BART at both the Richmond and Coliseum stations, and in 2017, over 160,000 riders transferred between systems at these two stations. The Richmond BART station also provides connections to Amtrak's San Joaquin and California Zephyr services. In addition, BART provides direct service to both the San Francisco and the Oakland International Airports. Over 125 private and publicly funded shuttle services – from medical, university, senior center, employment and high-tech services – provide rides to and from BART stations throughout the system, and many BART riders increasingly rely on the emerging Transportation Network Companies (TNCs) such as Uber and Lyft for "last mile" trips.

BART and 21 other Bay Area transit systems use the regional the Clipper Card fare collection system, facilitating transfers from one system to another. From August 2018 to August 2019, a monthly average of nearly 30 percent of all BART's riders transferred to another Bay Area operator from BART. Looking at Clipper usage data from this time period, BART can identify riders that use their Clipper Card on more than one transit system in a regular month. Of the 21 transit operators that were using Clipper at that time, all services that connect with BART have riders that use Clipper on both systems. For the major transit operators that connect to BART, 29 percent of AC Transit riders, 20 percent of SF MUNI riders, 12 percent of Caltrain riders, and 22 percent of SamTrans riders transferred to BART in a regular month.

Transit agencies that are either currently connected to the BART system or have plans for integration will benefit from growth in BART capacity possible by implementing the TCMP, as BART provides its passengers with connections to destinations throughout the Bay Area.

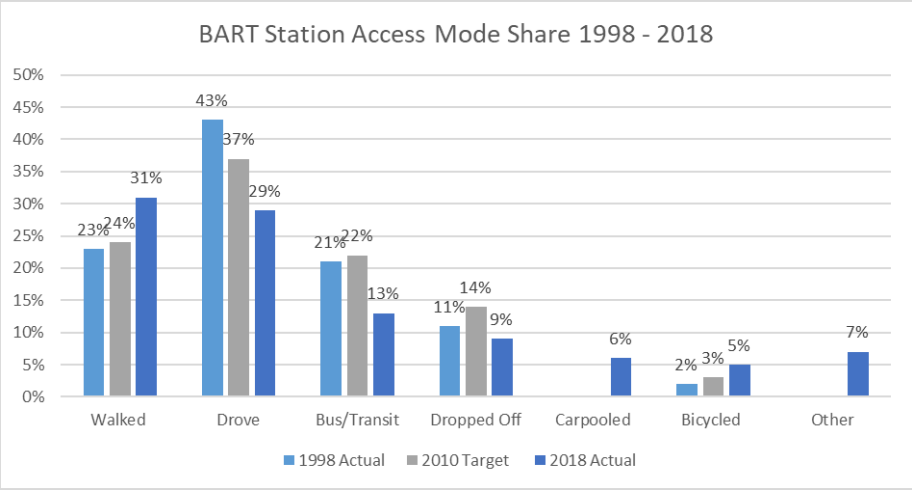
Figure 12. BART Connections in Bay Area



Gap Closure

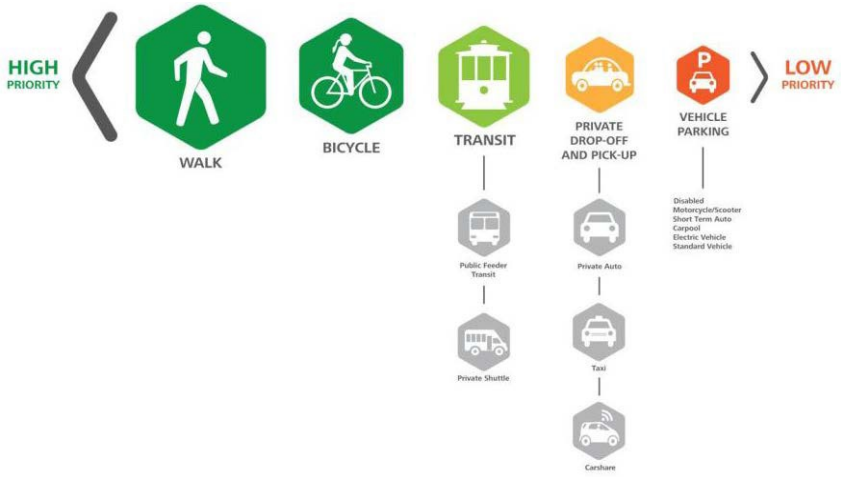
BART proactively supports projects and programs that encourage and support riders to access the BART system by walking and bicycling. BART regularly uses existing revenues and grant funds to improve pedestrian walkways, lighting and signage, and to provide secure bicycle parking at or near its stations. In 2018, over 35 percent of BART riders accessed stations by bicycling and walking (Figure 13). By leading to increased ridership, the TCMP and overall TCCCP will likely result in a proportional increase in bicycling/walking trips to BART stations.

Figure 13. BART Station Access Mode Share[10]



To encourage alternative access modes, BART has revised its Station Access Policy, which prioritizes investments to improve active transportation mode share and safety. With a clear focus on improved access, BART anticipates that the percentage of riders who use active transportation to reach BART will be even greater in the future. Figure 14 depicts BART's station access investment priorities, with walking and bicycling receiving the highest investments of all access types.

Figure 14. BART Station Access Investments Priorities



In addition, the newly designed train cars include bicycle storage areas, making it easier for riders to get to their destinations by bicycle once they have arrived at their stop. This improvement will help facilitate growth in bicycle station access.

Connectivity

As the Bay Area region has recovered from the Great Recession, the technology industry and related sectors have driven rapid and significant growth. Between 2010 and 2014 alone, San Francisco employment grew 25%, surpassing the projections from the last regional transportation plan, Plan Bay Area 2040. About a quarter of all workers in downtown San Francisco and Oakland use BART for their daily commute. As a major connection mode to job centers throughout the Bay Area, investments in BART's capacity capabilities will serve the thousands of workers using the system to access employment, recreational, and housing centers throughout the region. See the Regional Competitiveness section below for information on how the project will continue to support connection to jobs, major destinations, and residential areas throughout the Bay Area.

[10] 2018 data per 2018 BART Customer Satisfaction Study

Economic Development and Job Creation and Retention

Regional Competitiveness

BART supports the Bay Area's growing economy. Hundreds of thousands of commute trips are made on BART every weekday, saving commuters time and money, and connecting businesses with a larger pool of workers. Commuters traveling into San Francisco save on average 30 minutes each direction compared to driving. Commuters traveling to downtown Oakland save 7 minutes on average compared to driving and those traveling to Pleasant Hill save 30 minutes on average.[11] These travel time benefits help support the region's major economic centers by connecting businesses with the workers they need. About a quarter of all workers in downtown San Francisco and Oakland use BART for their daily commute. BART makes 12 percent more workers available within an hour commute of Downtown San Francisco and 28 percent more within an hour commute of the West Dublin/Pleasanton station.[12] Without investments in BART capacity to serve these important travel markets, the Bay Area's economic competitiveness would suffer. Many new jobs would go to regions that enjoy shorter travel times and less crowding.

Because of the value BART provides, the land around BART stations sells and leases at a substantial premium, increasing property tax revenue to local government. At the same time, the money that the region invests in building and maintaining BART is reinvested in the Bay Area economy, further contributing to growth. Over the next 25 years, BART is expected to take on an even larger role in the Bay Area's economy by helping to accommodate the region's growth.

Movement of Goods and Services

According to the San Francisco Bay Area Goods Movement Plan, traffic congestion is a prominent issue to the movement of goods in the Bay Area. Truck delays increase the cost of goods movement, as well as increased truck emissions. As described earlier in the Congestion Section, the TCMP will result in significant VMT reductions (over 10 billion over 20 years) which corresponds to less drivers utilizing the Transbay Corridor, allowing for better movement of trucks over the Bay Bridge.

Job Creation

BART's TCMP will result in direct jobs being created both at BART and for consultant staff. Based on staffing plans for TCMP, from 2021 through 2029, over 500 new positions will be created to build the system, with the jobs being located at BART headquarters, the Pittsburg, CA facility, and other locations internationally. Additionally, based the Caltrans Executive Factbook economic multiplier of 11 jobs per $1 million investment, the over TCMP will result in other 12,540 direct and indirect jobs supported.

Bombardier, the Canadian company under contract to complete the initial 775 cars that are BART's "Fleet of the Future" has opened a new facility in Pittsburg, California to complete this order, as well as future work in California and the west coast. This move by Bombardier, because of the large contract with BART for rail vehicles, will create economic opportunities for the Bay Area region by rehabbing an existing manufacturing facility and then staffing the facility. Bombardier currently has nearly 500 employees in California, working on projects beyond the current BART order of 775 vehicles. Bombardier employees are operating and maintaining the AirTrain system at San Francisco International Airport, maintaining the commuter rail car fleet for the Metrolink service at the Southern California Regional Rail Authority, and operating and maintaining the Coaster and Sprinter rail services for the North County

[11] 2014 BART Customer Satisfaction Study, https://www.bart.gov/sites/default/files/docs/CustSat2014Report_Final.pdf
[12] Economic Impacts of BART Operations, ALH Urban & Regional Economics, September 2015

Transit District. Bombardier is also in the early stages of bringing a new automated people mover system to Los Angeles International Airport.[13] Bombardier's presence in the region will only grow with this additional investment in the assembly plant. It has been reported that about 50 people currently work at the plant and expect that number to rise to about 115 as the plant ramps up. Bombardier's decision to locate this new manufacturing facility in the Bay Area is only possible with BART's large contract.

Air Quality and Greenhouse Gas Reductions

Included in the Cal B/C model conducted as part of this SCCP application, a GHG analysis was conducted in conjunction with the ridership analysis discussed above.

Table 5 summarizes the lifetime GHG reductions, which were quantified assuming a 20-year analysis, per Cal B/C guidance. These substantial GHG reductions are derived from the increased ridership that will be spurred from the increased capacity resulting in implementation of the TCMP. This increased ridership will mean that VMT will be reduced on the region's highways (as discussed previously) leading to fewer cars and less congestion on Bay Area roads.

Table 5. GHG Reduction Cal B/C Model Results

Emission Reductions	Total over 20 Years (tons)	Average Annual (tons)	Value over 20 years ($ million)	Average Annual Value ($ million)
CO Emissions Saved	12,029.34	601.47	$ 0.47	$ 0.02
CO_2 Emissions Saved	3,330,494.57	166,524.73	$ 87.32	$ 4.37
NO_X Emissions Saved	607.02	30.35	$ 5.83	$ 0.29
PM_{10} Emissions Saved	2.65	0.13	$ 0.24	$ 0.01
$PM_{2.5}$ Emissions Saved	16.44	0.82		
SO_X Emissions Saved	32.91	1.65	$ 1.19	$ 0.06
VOC Emissions Saved	496.76	24.84	$ 0.33	$ 0.02
Total	**3,343,679.69**	**167,183.98**	**$ 95.37**	**$ 4.77**

Based on the total GHG reductions over 20 years, the following equivalencies are shown for the TCCCP[14]:

- Over 380 million gallons of gasoline
- Over 3.7 billion pounds of coal
- Nearly 390 thousand homes' energy use for 1 year
- Over 7.8 million barrels of oil

Additionally, GHG reductions from the TCCCP is equivalent to carbon sequestered by:

- Over 55.8 million seedlings grown for 10 years
- Over 4.4 million acres of US forests in one year

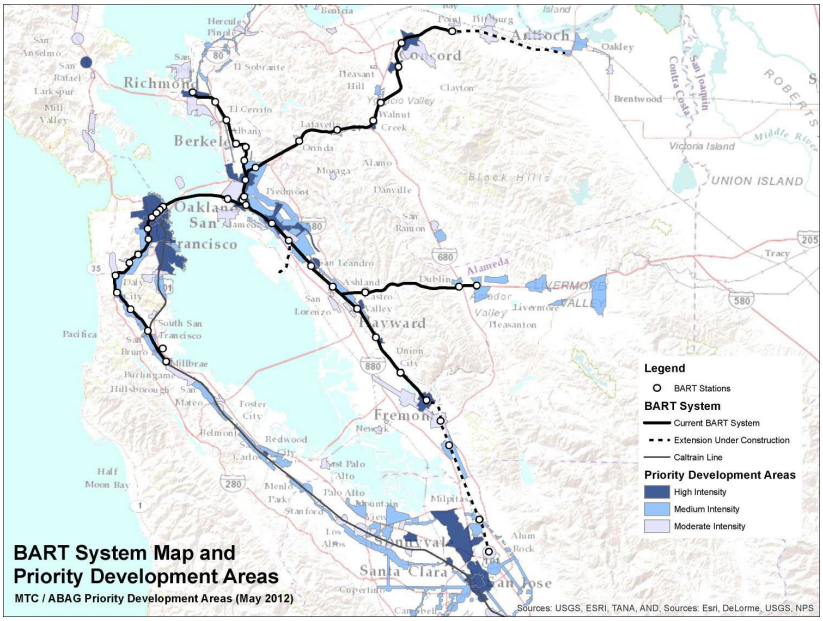
[13] https://www.bombardier.com/en/media/newsList/details.bt-20190614-bombardier-announces-expansion-of-its-u-s--footprint.bombardiercom.html

[14] These equivalencies were calculated based on the EPA Greenhouse gas equivalencies calculator: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Efficient Land Use

A key aspect of Plan Bay Area, which contains the Bay Area's strategy for reducing GHG emissions, is to concentrate new housing and jobs in designated Priority Development Areas (PDAs) that are served by BART and other transit operators (Figure 15). PDAs are areas within existing communities that local city or county governments have identified and approved for future growth. These areas typically are accessible by one or more transit services; and they are often located near established job centers, shopping districts and other services. Plan Bay Area 2040 is both a transportation plan and a housing plan and makes the case that the Bay Area currently has a housing crisis, with a need for a tremendous amount of additional affordable and other housing to support a growing population. Additionally, Plan Bay Area's Sustainable Communities Strategy calls for a 33 percent increase in the share of housing units located in PDAs that are well served by transit, many of which are centered around BART stations.

Figure 15. BART System Map and Priority Development Areas



While BART is not directly responsible for building housing, sustaining high quality transit service is essential to supporting the regional plan for concentrating housing in places best served by transit. BART proactively supports Transit Oriented Development (TOD) on its property and around its stations. As of July 2019, twenty-four TOD projects are currently under construction, planned, or completed on BART-owned property near stations, representing over $3 billion in private investment. These projects will add over 5,600 new housing units within walking distance of BART stations.[15] In general, BART's TOD Policy encourages and supports high quality TOD, including new housing within walking distance of BART stations.

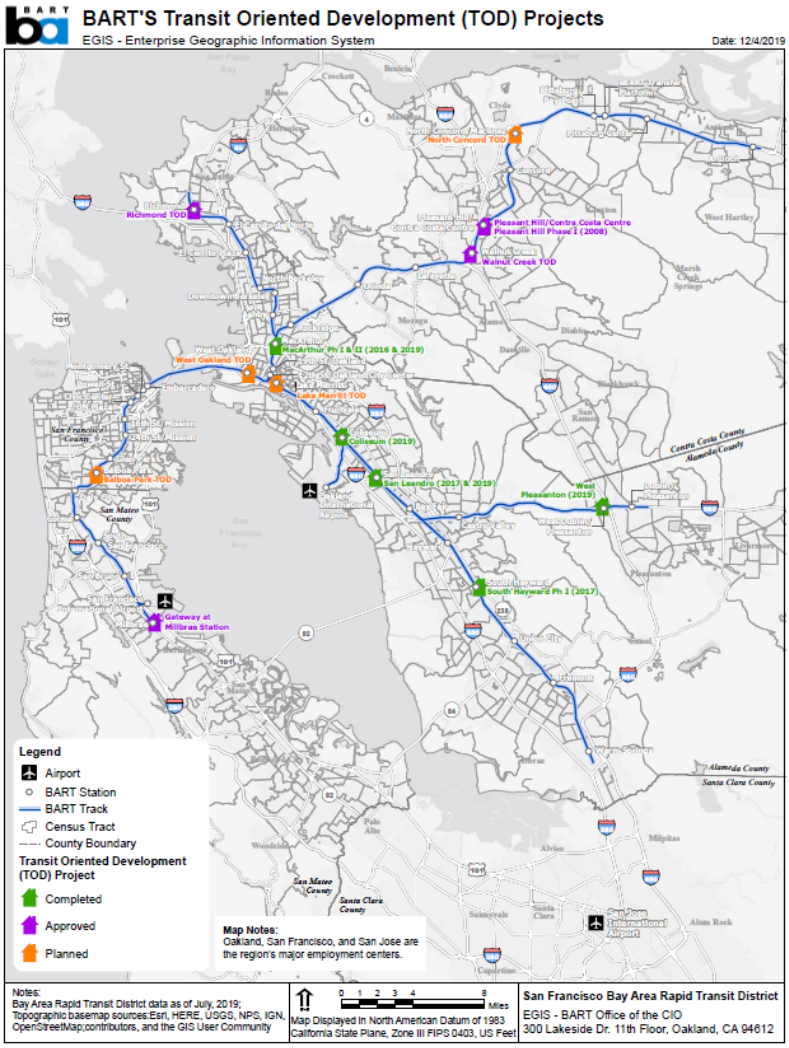
In 2016, the BART Board of Directors adopted an affordable housing policy and performance targets setting a goal of 35 percent affordable housing on its station sites which could result in an additional 7,000 affordable units over the next ten years. In addition, the BART Board also adopted TOD land use strategies, which ensure that TOD opportunities are explicitly accounted for in the acquisition of new properties, the location of new station sites, and the design and construction of station facilities. It is estimated that the TOD Policy will offset GHG emissions by 24 percent versus conventional development. This means that if BART produces 20,000 units on its property versus elsewhere in Alameda and Contra Costa counties, households will drive approximately 24 percent less. Additionally, by supporting TOD in these areas, BART is contributing to the region's Sustainable Communities Strategy goal of reducing per capita GHG emissions in 2035 by 16 percent.

[15] https://www.bart.gov/about/business/tod

BART has played a strong leadership role as a transit agency with an interest in housing, as evidenced by BART's role on the technical and steering committees of CASA – the committee to house the Bay Area – and BART's leadership role in partnership with the Nonprofit Housing Association of Northern California to draft the CASA public lands strategy. In 2018, then-Governor Brown signed AB2923 (Chiu/Grayson), which was authored in response to BART's strong Board-adopted commitments to constructing housing on BART property. This bill establishes a process by which developable BART-owned property in Alameda, Contra Costa, and San Francisco Counties will be rezoned to support transit-oriented development, and establishes development streamlining provisions similar to SB 35. BART is in the process of implementing this historic bill and has engaged the 22 jurisdictions affected by BART's TOD program.

It is assumed that many riders from these TODs on the BART system will drive BART ridership increases, once the TCCCP allows greater capacity during peak hours.

Figure 16. Station Modernization Program: Transit Oriented Development (TOD) Projects



Mixed-Use, Infill, and Multimodal Choices

As mentioned above, Plan Bay Area has placed a focus on concentrating new housing and jobs in Priority Development Areas (PDAs) that are served by BART and other transit operators. PDAs are areas within existing communities, typically accessible by one or more transit services, that local city or county governments have identified and approved for future growth and are eligible for grants that focus on affordable housing, infrastructure development, and transit-oriented development planning. While BART is not directly responsible for building housing, the focus placed on transit-oriented developments and converting under-used parcels of land near transit stations into commercial, residential, and retail centers makes housing an important consideration for the agency.

BART has also adopted an affordable housing policy and performance targets that set a goal of 35 percent affordable housing on its station sites which could result in an additional 7,000 affordable units over the next ten years. In addition, the BART Board of Directors also adopted TOD land use strategies, which ensure that TOD opportunities are explicitly accounted for in the acquisition of new properties, the location of new station sites, and the design and construction of station facilities. The emphasis placed on TOD not only displays BART's commitment to expanding the multimodal choices for residents in underdeveloped areas, but also ensuring that those residents have affordable and accessible housing options. With the implementation of the TCCCP and the TCMP, BART will be able to increase

the capacity and reliability of its existing system to better serve the anticipated increases in demand and ridership resulting from the success of sustainable development practices across the Bay Area.

See above section (Efficient Land Use) and Accessibility Section for more information on how the project supports mixed-use and in-fill development with multimodal choices.

Local Land Use Policies

Pursuant to CA Public Utilities Code 29010 (AB2923 2923, Chiu/Grayson, 2018), by July 1, 2022, local jurisdictions are required to ensure that all developable BART-owned property near stations in Alameda, Contra Costa, and San Francisco Counties will have zoning consistent with BART's 2017 TOD Guidelines. All properties will be zoned for at least 75 units/acre, with allowable heights ranging from at least 5 stories to at least 12 stories, and floor-area ratios of at least 3.0. There will be no residential or office parking minimums, with parking maximums ranging from 0.375 to 1.

The impetus for AB 2923 is BART's own ambitious policies supporting transit-oriented development. BART aims to produce 20,000 housing units, 35 percent of which are affordable, and 4.5 million square feet of office space on its property by 2040. At least 20 percent of units at any given BART development must be affordable. BART has station access and other policies supporting goals to increase the share of BART passengers using active transportation modes to access the stations and has created its own "Safe Routes to BART" funding program under Measure RR to encourage local jurisdictions to enhance local pedestrian and bicycle access.

The law further states that if a project is at least 50 percent residential, with at least 20 percent affordable housing and meeting certain labor standards, a developer of BART property may pursue SB 35 streamlining.

While state law will fully ensure that all of BART's properties are zoned for multi-family or residential mixed-use development, most local jurisdictions have adopted existing specific plans around BART stations to ensure the land use plans nearby are transit supportive, and four are currently in progress (North Concord, Irvington, North Berkeley, Ashby). Many of these existing policies include local density bonus provisions, project-level EIRs that reduce the environmental review process, or by-right development conditions.

E3. Deliverability Criteria

Matching Funds

The cost of implementing the TCMP through the Transbay Corridor is approximately $1.14 billion and is shown in Appendix I (PPR) in more detail. The following section outlines the matching funds.

TCMP implementation through the Transbay Corridor represents a usable geographic segment of the Transbay Corridor Core Capacity Program, separate from the other TCCCP components, and can be fully completed with funding from the 2020 Solutions for Congested Corridor Program.

Table 6. TCMP, Transbay Corridor Segment Cost

Funding Source	Funding Amount ($ millions)
BART Capital Allocation	$52.93
2018 TIRCP Award	$318.60
Measure RR	$312.41

FTA CIG	$397.24
2020 SCCP Request	$60.00
TOTAL	$1,141.18

Confirmation of matching funds are located at the following links:

- 2018 TIRCP Award: TIRCP Project Detail Summaries (page 5)
- FTA CIG: USDOT allocates $300 million to San Francisco Transbay Corridor Core Capacity Project

Deliverability

The TCMP will be implemented through three contracts:

1. CBTC Design-Build Contract,
2. Switch Machine Cabling Contract
3. MacArthur/Downtown Oakland Interlock Cable Upgrade Contract

The procurement process for the CBTC Design-Build Contract is currently underway and construction phase of this contract is anticipated to begin in 2021. The Switch Machine Cabling Contract will begin construction in early 2021 and be complete in February 2023. The MacArthur/Downtown Oakland Interlock Cable Upgrade Contract will begin construction in January 2022 and be complete in July 2024. These two contracts will construct portions of the train control system separate from the design-build contract and will be operational immediately upon implementation.

Table 7 shows the sources and uses of overall TCMP funding broken out by contract. 2020 SCCP funds will be used exclusively for the switch machine cabling and interlock cable upgrade contracts.

Table 7. TCMP Sources and Uses ($ millions)

Funding Source	CBTC Design-Build Contract	Switch Machine Cabling Contract	MacArthur/Downtown Oakland Interlock Cable Upgrade Contract	Total Funding
BART Capital Allocation	$52.93			$ 52.93
2018 TIRCP Award	$ 318.60			$ 318.60
Measure RR	$ 309.23	$ 3.18		$ 312.41
FTA CIG	$ 397.24			$ 397.24
2020 SCCP Request		$ 45.15	$ 14.85	$ 60.00
Total	**$1,078.00**	**$ 48.33**	**$ 14.85**	**$ 1,141.18**
Construction Begin – End Years	2021 - 2028	2021 – 2023	2022 - 2024	TCMP segment implemented in 2028

In September of 2017, BART received confirmation that its TCCCP qualified for a Categorical Exclusion (CE) from NEPA. The September 2017 CE confirmation letter from FTA is found in BART's TCCCP website. Environmental Documentation. The rail vehicle acquisition, traction power improvements and TCMP projects are statutorily exempt from the California Environmental Quality Act, and the BART Board adopted the project and certified the statutory exemption in November 2016. HMC Phase 2 was cleared through CEQA with a Negative Declaration (2011) and two addenda to the Negative Declaration (2013 and 2016). BART's TCMP does not require any third-party involvement to begin implementation.

Collaboration

Caltrans submits this 2020 SCCP application in collaboration with MTC and BART. Caltrans, while the submitter of this application, will not be responsible for project completion or funding shortfalls that may arise. Additionally, MTC, while a co-applicant, will not be responsible for project completion or funding shortfalls that may arise for the TCMP. BART will be the agency responsible for project and funding management, implementation, and execution.

The Metropolitan Transportation Commission (MTC) is the transportation planning, financing and coordinating agency for the nine-county San Francisco Bay Area. The Commission's work is guided by a 21-member policy board. MTC is responsible for producing and updating the Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle and pedestrian facilities. MTC's current RTP, known as Plan Bay Area 2040, was adopted on July 26, 2017 and includes the TCCCP within the fiscally constrained plan. As the designated recipient of federal transit formula funds in the Bay Area, MTC administers funding from several federal programs to the region's transit agencies. In addition, the Commission is a programming agent for several state transit grant programs including State Transit Assistance.

Cost Effectiveness

An economic benefit-cost analysis of the TCMP was conducted using Caltrans' Life-Cycle Benefit-Cost Analysis Model 7.2 (Cal-B/C v.6.2). Because the different components of the TCCCP (with TCMP as the most important component for reliability and capacity improvements) work together to generate the capacity improvements, the BCA evaluates the costs and benefits of the entire TCCCP. The analysis shows that the TCCCP will generate an estimated $3.5 billion in present-value benefits (2016$) over its expected useful life of 20 years, exceeding the expected TCCCP costs (capital and O&M) of $2.17 billion (discounted 2016$). With a benefit-cost ratio (BCR) of 1.6, the total TCCCP is expected to generate economic benefits that outweigh its costs. Table 8 outlines the results of the BCA over the full life of the TCCCP and in its first 20 years of operation. An Excel spreadsheet of the BCA model and supporting documentation are submitted with this SCCP application.

Table 8. Benefit Cost Analysis Results

(3)

INVESTMENT ANALYSIS
SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$2,167.2
Life-Cycle Benefits (mil. $)	$3,553.3
Net Present Value (mil. $)	$1,386.2
Benefit / Cost Ratio:	1.6
Rate of Return on Investment:	8.5%
Payback Period:	7 years

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$850.9	$0.0	$850.9	$42.5
Veh. Op. Cost Savings	$2,055.4	$0.0	$2,055.4	$102.8
Accident Cost Savings	$550.9	$0.0	$550.9	$27.5
Emission Cost Savings	$96.2	$0.0	$96.2	$4.8
TOTAL BENEFITS	$3,553.3	$0.0	$3,553.3	$177.7
Person-Hours of Time Saved			63,543,065	3,177,153

Should benefit-cost results include:

1) Induced Travel? (y/n)	Y	Default = Y
2) Vehicle Operating Costs? (y/n	Y	Default = Y
3) Accident Costs? (y/n)	Y	Default = Y
4) Vehicle Emissions? (y/n) includes value for CO_2e	Y	Default = Y

EMISSIONS REDUCTION	Tons: Total Over 20 Years	Tons: Average Annual	Value (mil. $): Total Over 20 Years	Value (mil. $): Average Annual
CO Emissions Saved	12,029	601	$0.5	$0.0
CO_2 Emissions Saved	3,330,495	166,525	$87.3	$4.4
NO_X Emissions Saved	607	30	$5.8	$0.3
PM_{10} Emissions Saved	3	0	$0.2	$0.0
$PM_{2.5}$ Emissions Saved	16	1		
SO_X Emissions Saved	33	2	$1.2	$0.1
VOC Emissions Saved	497	25	$0.3	$0.0

The increase in ridership and the corresponding decrease in VMT described in previous sections will result in fewer greenhouse gas emissions, fewer automobile crashes, and lower vehicle operating costs, which have been estimated and monetized using the parameters laid out in Cal-B/C v. 7.2. The travel time savings calculation assumes that the change in headway from 15 minutes to 12 minutes will result in the average current rider waiting 90 seconds fewer per trip (half of the decrease in headway). This figure does not account for additional time savings from reduced delays and reduced passenger queuing. Travel time changes for new riders were not included in the analysis.

F. FUNDING AND DELIVERABILITY

F1. Project Cost Estimate

The cost of implementing the TCMP through the Transbay Corridor is approximately $1.14 billion. The cost estimates below are shown in year-of-expenditure (YOE) dollars and have all been approved by the BART General Manager. See Tables 6 and 7 for details on project cost and funding sources.

Funding Sources

BART Funds ($52.93M): In June 2019, the BART Board authorized $200 million of funds, "BART Capital Allocations", to be directed to BART's Transbay Corridor Core Capacity Project. These capital allocations, as well as a prior commitment made by BART to the TCMP and other elements of the TCCCP, are generated from the Productivity-Adjusted Inflation-Based Fare Increase Program which implements fare adjustments every two years between 2014 and 2026 with capital proceeds directly allocated to a separate account to fund these projects.

2018 TIRCP ($318.60M): In 2018, BART was awarded $318.6 million in Transit and Intercity Rail Capital Improvement Program funds for funding. The TCCCP funding plan allocates the entire $318.6 million to TCMP.

Measure RR ($312.41M): Measure RR is a general obligation bond measure which was passed by the voters in the BART District in November 2016. The measure provides $3.5 billion to fund the system's most critical investments for maintaining the system in a state-of-good-repair and crowding relief. $312.41 million in Measure RR funds is programmed for this segment of the project.

FTA CIG ($397.24M): BART's Transbay Corridor Core Capacity Project is in the final stages of securing a $1.169 billion grant from Federal Transit Administration's (FTA) Capital Investment Grant (CIG) program. TCMP is a major component of this scope. In June 2019, the Transbay Corridor Core Capacity Project was admitted to Entry into Engineering phase of the CIG program, with a Full Funding Grant Agreement expected in 2020. The full CIG grant amount is for $1.169 billion, of which $397 million is programmed for TCMP.

Potential Cost Overruns

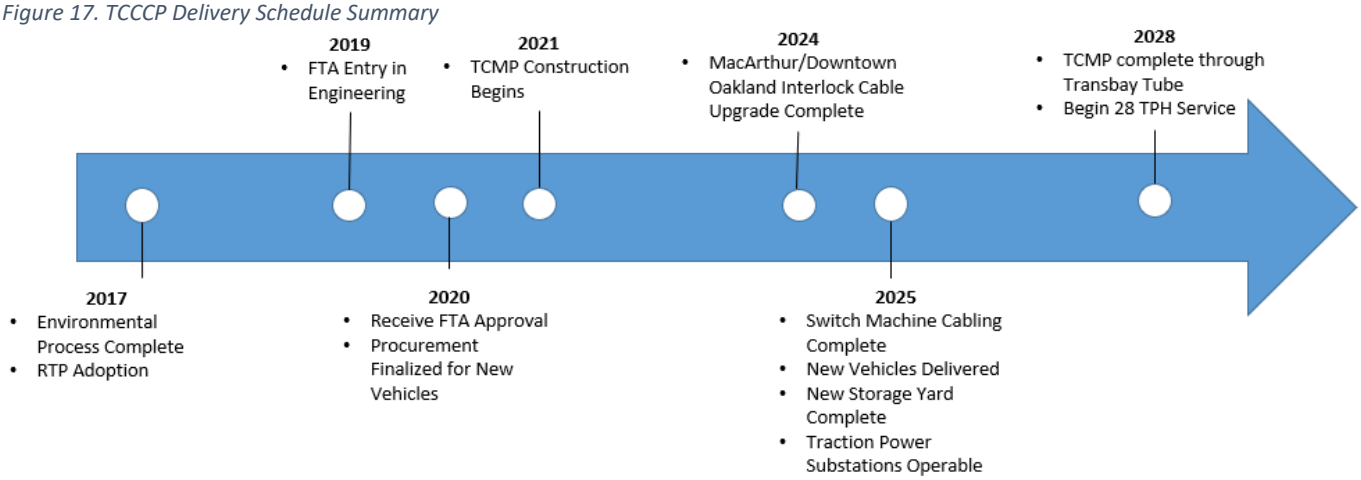
Significant program contingency is available for potential cost overruns to the entire TCCCP. BART has the project management skills, professional expertise and financial means to deliver this project, assuming funding is secured. Any cost overruns would be borne solely by BART, paid for with sources including, but not limited to, BART fare revenues and additional funding through its Measure RR program.

Project Delivery Plan

The overall TCCCP has been sequenced to deliver all four component projects concurrently to minimize the overall Program duration and bring the Program benefits to fruition as quickly as possible. As shown in Figure 17, TCMP

contains the longest schedule duration in the Program. Accordingly, the Program critical path extends through the TCMP implementation schedule.

Figure 17. TCCCP Delivery Schedule Summary



BART has begun the procurement process for the CBTC Design-Build contract and expects to begin the construction phase of this project in 2021. For the TCMP train control power cable and interlock cable upgrades, BART is expecting to give final notice to proceed (NTP) in early 2021 and early 2022 respectively. Due to contract sequencing, these two contracts are proposed to receive state SCCP funds. While each piece delivers independent utility, all three scopes will work together to deliver the full TCMP benefits outlined in this application. The TCMP schedule anticipates that the new train control system will be ready to demonstrate 28 train per hour (TPH) capacity through the Transbay Corridor by 2028.

BART has conducted a thorough analysis of the risks in fully delivering the TCMP projects and has outlined specific mitigation strategies to minimize these risks. The potential risks include unforeseen site conditions, inadequate survey data, Oakland maintenance shop availability, unforeseen HAZMAT, proposer protests, and BART staffing levels. By identifying these issues early in the design process, BART has been prepared to implement the identified strategies including the performance of additional site and conditions surveys, organizational team management to ensure appropriate staffing and organizational readiness, and other tasks. A more complete summary of the potential delivery risks can be provided upon request.

G. COMMUNITY IMPACTS

As stated previously and documented in the CE for the TCCCP, there are no adverse community effects expected from TCMP implementation.

BART riders come from across the income spectrum and from the full diversity of the region's racial and ethnic groups in rough proportion to their representation in the population of the BART district as a whole. Additionally, BART offers an essential travel option for people with disabilities, for youth and seniors, for those living in households without access to a car, and for whom daily driving would be an unaffordable expense. As the spine of the regional transit system, BART helps to make the Bay Area more affordable for lower-income households and is accessible to all. For more information on BART's impacts, please see Role of BART in the Region.

BART has a long and successful history of interacting and working with social justice, environmental, community-based, faith-based, disability rights and other groups in the BART service area. BART has solicited input and sought ideas on a wide variety of both programs and projects – from the design of new rail cars, to station area improvements or development, to changes in fares and their potential impact. BART has successfully implemented several

community-based grants such as Caltrans' Environmental Justice grants, MTC's Community-based Transportation Planning grants, as well as the successful Better BART outreach campaign in 2016.

BART's outreach efforts are designed to ensure meaningful access and participation by minority, low income, and Limited English Proficient (LEP) populations and the four projects included in the TCCCP provide benefits to these groups.

G1. Community Engagement

BART's Public Participation Plan (PPP) was developed in 2011, with an update in 2015, and followed extensive outreach throughout the BART service area and guides the organizations ongoing public participation endeavors. The PPP ensures that BART utilizes effective means of providing information and receiving public input on transportation decisions from low income, minority and limited English proficient (LEP) populations.

As recommended in the PPP, BART has implemented a variety of outreach techniques for projects related to the TCCCP. In 2014, BART launched its "Fleet of the Future" outreach campaign to obtain public feedback on the design of BART's new vehicles. A series of ten events were held at BART stations and in local communities throughout the San Francisco Bay Area. Approximately 17,500 people attended the events and a total of 7,666 surveys were collected. BART staff consulted regularly with members of the disabled community, including the BART Accessibility Task Force (BATF), on the design and functionality of the new BART trains. The BATF provided hands-on feedback on all aspects of the car design.

Outreach related to the 2014 BART Vision Plan engaged over 2,000 people in exploring the tradeoffs involved in considering how BART can meet its future needs. The public helped BART staff narrow down future projects and investments BART should focus on by determining which ones are most important to the public and fit best into BART's goals of serving the Bay Area for years to come. A total of ten in-station events were held and a total of 2,551 surveys were collected.

BART's Title VI/Environmental Justice Advisory and Limited English Proficiency Advisory committees meet regularly to assist BART on all issues of policy with a focus on meeting the needs of minority and disadvantaged communities and riders. In November 2017, both committees received a presentation on the TCCCP.

In 2017, BART also partnered with MTC to conduct outreach on its Core Capacity Transit Study, a collaborative effort to improve public transportation to and from the San Francisco core. Outreach activities consisted of two public meetings to identify investments and improvements to increase transit capacity to the San Francisco Core. Approximately 80 people participated in the public meetings.

Outreach to Disadvantage or Low-Income Communities:

- The PPP outlines strategies to engage disadvantaged and low-income communities, including: Translation of flyers and other meeting materials and interpretation services
- Outreach to Community Based Organizations (CBOs)
- Providing notification using Ethnic Media
- Hosting meetings in accessible locations

Additional Outreach activities include:

- Fleet of the Future New Train Car Model
- BART Vision – Future BART

- Embarcadero-Montgomery Capacity Implementation and Modernization Study
- Better BART
- MTC Plan Bay Area 2040
- MTC Core Capacity Transit Study
- Hayward Maintenance Complex Noise Study

Negative Impacts to Community

As noted previously, the CE for the Transbay Corridor Core Capacity Program noted no negative impacts to the community from TCMP implementation.

Effect of Public Participation

Because of the community feedback received, significant changes were made to the design of the Fleet of the Future cars, including:

- Wheelchair locations within the train car
- The number and locations of tripod standing poles
- Location and design of bike racks

Specific to bike racks: when the pilot cars were developed, the Board directed staff to test different designs for bikes onboard, so of the initial 10 pilot cars:

- Six had one bike rack with slots for three bikes
- Two had one multi-purpose space (open area with bar)
- Two had both a bike rack and a multi-purpose space

Research with cyclists in 2019 showed that while they liked having a dedicated space for bikes, the onboard rack was rated poorly on most attributes. Due to this feedback, BART recommended that the Board proceed with the open area, rather than the bike racks. The Board also decided to incorporate two bike/open areas per car rather than one.

Continued Public Engagement

Additionally, later in-service feedback and surveys drove BART to reinclude the bar/straps configuration and inclusion of two bike areas per car. Other items driven by specific outreach, surveys and feedback, include:

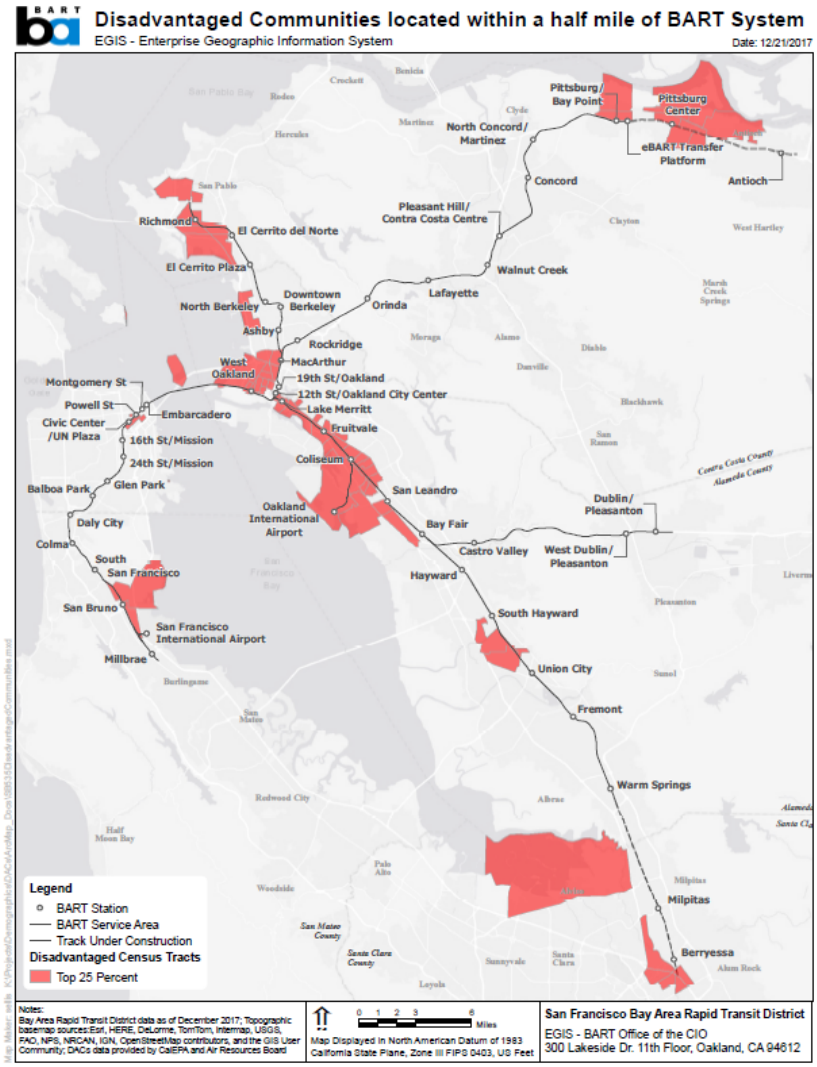
- Seat height
- Seat cushion thickness
- Legroom between seats near door and first row of forward-facing seats
- Overhead straps of varying lengths
- Overhead bars and strap configuration at center door
- Arm rests (decision not to include in most locations)
- Information set displayed on the passenger information system

Every other year, BART conducts a Customer Satisfaction Survey (2018 BART Customer Satisfaction Survey). BART's Customer Satisfaction Study is a tool to help BART prioritize efforts to achieve higher levels of customer satisfaction. The study involves surveying BART customers every two years to determine how well BART is meeting customers' needs and expectations. BART will continue to engage the public through these surveys.

G2. Location in Disadvantaged/Low-Income Community

Specifically, designated disadvantaged communities (DACs) located along/within a half mile of the BART line and to the TCCCP can be seen in Figure 18. The metric used for this DACs analysis is CalEnviroScreen's Disadvantaged Communities definition. The Core Capacity Corridor includes nine BART stations located directly within disadvantaged communities. Additionally, for the most overburdened section of the Core Capacity corridor from West Oakland to Embarcadero Station, the West Oakland Station is also located in a disadvantaged community. In total, at least 15 of the over 50 existing and planned BART stations are in disadvantaged communities. This is equal to 30 percent of all stations.

Figure 18. Disadvantaged Communities Located within a half mile of the BART System



H. OTHER

Private Investments

Not Applicable to this application.

Rail Investments

Not applicable to this application.

I. APPENDICES

Appendix I: Project Programming Request Forms

Appendix II: Performance Indicators and Measures

Appendix III: State Highway System Project Impact Statement (FORM CTC-0002)

Appendix IV: Application Letters of Support

- Elected Officials
- City of San Francisco
- City of Oakland
- San Francisco Transit Riders
- Bay Area Council
- Low Income Investment Fund
- Coalition for Clean Air
- Greenbelt Alliance
- The Unity Council

Appendix V: TCMP Ridership Modeling and Methodology

Appendix VI: BART Outreach to Disadvantaged Communities

Appendix VII: BART Public Participation Plan

Appendix VIII: BART Fatalities and Collisions Table

APPENDIX I—PROJECT PROGRAMMING REQUEST (PPR)

There are four PPRs submitted for this SCCP application. Per CTC guidance, the PPR forms include the overall project segment (TCMP through Transbay Corridor), as well as separate PPR forms for each contract:

1. TCMP through Transbay Corridor
2. TCMP - Switch Machine Cabling Contract
3. TCMP - MacArthur/Downtown Oakland Interlock Cable Upgrade Contract
4. TCMP - CBTC Design-Build Contract

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (NEW 02/2020)

PPR ID
ePPR-6000-2021-0001 v1

Amendment (Existing Project) ☐ YES ☒ NO					Date	06/22/2020 05:55:36
Programs ☐ LPP-C ☐ LPP-F ☒ SCCP ☐ TCEP ☐ STIP ☐ Other						
District	EA	Project ID	PPNO	Nominating Agency		
04				Caltrans HQ		
County	Route	PM Back	PM Ahead	Co-Nominating Agency		
Contra Costa				Metropolitan Transportation Commission		
Alameda				MPO	Element	
San Francisco				MTC	Mass Transit (MT)	
Project Manager/Contact			Phone	Email Address		
Nikki Foletta			510-874-7346	nfolett@bart.gov		

Project Title

Train Control Modernization Project (All Contracts)

Location (Project Limits), Description (Scope of Work)

The Train Control Modernization Program will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco, and is located in Alameda and San Francisco counties. This Congested Corridors Scope element will fund the TCMP through the Bay Area's Transbay Tube, allowing BART to achieve shorter headways and increased capacity, to operate 28 regularly scheduled trains per hour on the trunk line between Daly City and the Oakland Wye. The TCMP includes the replacement of the existing train control systems with a new train control system, as well as update the train control power cables and interlock cables within the existing right-of-way.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly:	16,17,18,19,20,22,25,14,15	Senate:	7,9,10,11,13	Congressional:	17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase		08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report		08/01/2015
End Environmental Phase (PA&ED Milestone)		07/01/2017
Begin Design (PS&E) Phase		06/01/2018
End Design Phase (Ready to List for Advertisement Milestone)		01/01/2021
Begin Right of Way Phase		01/01/2021
End Right of Way Phase (Right of Way Certification Milestone)		01/01/2021
Begin Construction Phase (Contract Award Milestone)		08/01/2020
End Construction Phase (Construction Contract Acceptance Milestone)		08/01/2031
Begin Closeout Phase		09/01/2031
End Closeout Phase (Closeout Report)		12/01/2031

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (NEW 02/2020)

PPR ID
ePPR-6000-2021-0001 v1

Date 06/22/2020 05:55:36

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor and Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Date 06/22/2020 05:55:36

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10000000000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63543065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	0	16.44	-16.44
			PM 10 Tons	15.46	18.11	-2.65
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3330494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3336	1924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (NEW 02/2020)

PPR ID
ePPR-6000-2021-0001 v1

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, Alameda, San Francisco				

Project Title

Train Control Modernization Project (All Contracts)

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON									San Francisco Bay Area Rapid Trans
TOTAL									
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)	12,129							12,129	
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		1,129,051						1,129,051	
TOTAL	12,129	1,129,051						1,141,180	

Fund #1:	Other State - Transit and Intercity Rail Capital Program (TIRCP) (Committed)							Program Code
Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		318,600						318,600	
TOTAL		318,600						318,600	

Fund #2:	Local Funds - Bart Revenue (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)	12,129							12,129	
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		40,797						40,797	
TOTAL	12,129	40,797						52,926	

Fund #3:	FTA Funds - FTA - 5309(b) - New Starts Small Starts and Core (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		397,240						397,240	
TOTAL		397,240						397,240	

PPR ID
ePPR-6000-2021-0001 v1

Fund #4:	State SB1 SCCP - Solution for Congested Corridors Program (Uncommitted)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		60,000						60,000	
TOTAL		60,000						60,000	

Fund #5:	Local Funds - Measure RR (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		312,414						312,414	
TOTAL		312,414						312,414	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0002 v3

Amendment (Existing Project) ☐ YES ☒ NO					Date	07/13/2020 11:56:15
Programs ☐ LPP-C ☐ LPP-F ☒ SCCP ☐ TCEP ☐ STIP ☐ Other						
District	EA	Project ID	PPNO	Nominating Agency		
04				Caltrans HQ		
County	Route	PM Back	PM Ahead	Co-Nominating Agency		
Contra Costa				Metropolitan Transportation Commission		
Alameda				MPO	Element	
San Francisco				MTC	Mass Transit (MT)	
Project Manager/Contact			Phone	Email Address		
Nikki Foletta			510-874-7346	nfolett@bart.gov		

Project Title

Train Control Modernization Project (Switch Machine Cabling Contract)

Location (Project Limits), Description (Scope of Work)

The Switch Machine Cabling Contract will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Alameda and San Francisco counties. The Switch Machine Cabling contract will include upgrading raceway, power and communication cables at 21 train control rooms and 26 wayside interlocks and associated switches, including the power cable from the Station House Power to the Train Control Rooms in 22 locations. This scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly:	16,17,18,19,20,22,25,14,15	Senate:	7,9,10,11,13	Congressional:	17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase		08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report		08/01/2015
End Environmental Phase (PA&ED Milestone)		09/01/2017
Begin Design (PS&E) Phase		06/01/2018
End Design Phase (Ready to List for Advertisement Milestone)		07/01/2020
Begin Right of Way Phase		07/01/2020
End Right of Way Phase (Right of Way Certification Milestone)		07/01/2020
Begin Construction Phase (Contract Award Milestone)		07/01/2021
End Construction Phase (Construction Contract Acceptance Milestone)		12/01/2025
Begin Closeout Phase		10/01/2025
End Closeout Phase (Closeout Report)		06/01/2026

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0002 v3

Date 07/13/2020 11:56:15

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor / Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Date 07/13/2020 11:56:15

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

PPR ID
ePPR-6000-2021-0002 v3

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63,543,065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0002 v3

District	County	Route	EA	Project ID	PPNO
04	Contra Costa, Alameda, San Francisco				

Project Title

Train Control Modernization Project (Switch Machine Cabling Contract)

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON								
TOTAL								

Implementing Agency
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans

Proposed Total Project Cost ($1,000s)								
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		48,330						48,330
TOTAL		48,330						48,330

Notes

Fund #1:	State SB1 SCCP - Solution for Congested Corridors Program (Uncommitted)							Program Code
Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON								
TOTAL								

Funding Agency

Proposed Funding ($1,000s)								
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		45,150						45,150
TOTAL		45,150						45,150

Notes

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0002 v3

Fund #2:	Local Funds - Measure RR (Committed)								Program Code
Existing Funding ($1,000s)									
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									Measure RR
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		3,180						3,180	
TOTAL		3,180						3,180	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0003 v2

Amendment (Existing Project) ☐ YES ☒ NO						Date	07/13/2020 11:57:42
Programs ☐ LPP-C ☐ LPP-F ☒ SCCP ☐ TCEP ☐ STIP ☐ Other							
District	EA	Project ID	PPNO	Nominating Agency			
04				Caltrans HQ			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
Alameda				Metropolitan Transportation Commission			
San Francisco				MPO	Element		
Contra Costa				MTC	Mass Transit (MT)		
Project Manager/Contact			Phone	Email Address			
Nikki Foletta			510-874-7346	nfolett@bart.gov			

Project Title

BART Train Control Modernization Program (MacArthur/Downtown Oakland Interlock Cabling Upgrade Contract)

Location (Project Limits), Description (Scope of Work)

The Downtown Oakland Interlock Upgrade Contract will be implemented at MacArthur and Downtown Oakland BART stations, and will affect service through the Transbay Corridor (segment) connecting Oakland and San Francisco and is in Alameda and San Francisco counties. The Downtown Oakland Interlock Upgrade Contract includes installation of new surface mounted train control raceways and associated cables to new Switch Power Supply Cabinets (SPSC) and associated interlock switches will be designed along the K Line from MacArthur Train Control Room to Interlocking K23, K25 and K35. This scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly:	16,17,18,19,20,22,25,14,15	Senate:	7,9,10,11,13	Congressional:	17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase		08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report		08/01/2015
End Environmental Phase (PA&ED Milestone)		09/01/2017
Begin Design (PS&E) Phase		01/01/2020
End Design Phase (Ready to List for Advertisement Milestone)		01/01/2021
Begin Right of Way Phase		01/01/2021
End Right of Way Phase (Right of Way Certification Milestone)		01/01/2021
Begin Construction Phase (Contract Award Milestone)		02/01/2022
End Construction Phase (Construction Contract Acceptance Milestone)		06/01/2024
Begin Closeout Phase		04/01/2024
End Closeout Phase (Closeout Report)		12/01/2024

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0003 v2

Date 07/13/2020 11:57:42

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor and Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Date 07/13/2020 11:57:42

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

PPR ID
ePPR-6000-2021-0003 v2

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	63,543,065	0	63,543,065
			Hours per Capita	0	0	0
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0003 v2

District	County	Route	EA	Project ID	PPNO
04	Alameda, San Francisco, Contra Costa				

Project Title

BART Train Control Modernization Program (MacArthur/Downtown Oakland Interlock Cabling Upgrade Contract)

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Implementing Agency
E&P (PA&ED)									San Francisco Bay Area Rapid Trans
PS&E									San Francisco Bay Area Rapid Trans
R/W SUP (CT)									San Francisco Bay Area Rapid Trans
CON SUP (CT)									San Francisco Bay Area Rapid Trans
R/W									San Francisco Bay Area Rapid Trans
CON									San Francisco Bay Area Rapid Trans
TOTAL									
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		14,850						14,850	
TOTAL		14,850						14,850	

Fund #1:	State SB1 SCCP - Solution for Congested Corridors Program (Uncommitted)								Program Code
Existing Funding ($1,000s)									
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		14,850						14,850	
TOTAL		14,850						14,850	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0004 v1

Amendment (Existing Project) ☐ YES ☒ NO						Date	07/13/2020 11:58:42
Programs ☐ LPP-C ☐ LPP-F ☒ SCCP ☐ TCEP ☐ STIP ☐ Other							
District	EA	Project ID	PPNO	Nominating Agency			
04				Caltrans HQ			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
Alameda				Metropolitan Transportation Commission			
Contra Costa				MPO	Element		
San Francisco				MTC	Mass Transit (MT)		
Project Manager/Contact			Phone	Email Address			
Nikki Foletta			510-874-7346	nfolett@bart.gov			

Project Title

Train Control Modernization Project (CBTC)

Location (Project Limits), Description (Scope of Work)

The CBTC Contract will be implemented through the Transbay Corridor (segment) connecting Oakland and San Francisco and is located in Alameda and San Francisco counties. The CBTC Contract will replace the existing train control system with a new communications-based train control system, allowing BART to achieve the shorter headways needed to operate more regularly scheduled trains through the Transbay Corridor. This scope element is an integral part of the overall benefits from implementing the TCMP through the Transbay Corridor.

Component	Implementing Agency
PA&ED	San Francisco Bay Area Rapid Transit District
PS&E	San Francisco Bay Area Rapid Transit District
Right of Way	San Francisco Bay Area Rapid Transit District
Construction	San Francisco Bay Area Rapid Transit District

Legislative Districts

Assembly:	16,17,18,19,20,22,25,14,15	Senate:	7,9,10,11,13	Congressional:	17,18,19,5,9,11,12,13,14,15

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase		08/01/2015
Circulate Draft Environmental Document Document Type CE		
Draft Project Report		08/01/2015
End Environmental Phase (PA&ED Milestone)		09/01/2017
Begin Design (PS&E) Phase		09/01/2017
End Design Phase (Ready to List for Advertisement Milestone)		09/01/2017
Begin Right of Way Phase		09/01/2017
End Right of Way Phase (Right of Way Certification Milestone)		09/01/2017
Begin Construction Phase (Contract Award Milestone)		08/01/2020
End Construction Phase (Construction Contract Acceptance Milestone)		08/01/2031
Begin Closeout Phase		09/01/2031
End Closeout Phase (Closeout Report)		12/01/2031

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0004 v1

Date 07/13/2020 11:58:42

Purpose and Need

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Corridor and Tube. Long term ridership trends at BART require additional capacity, which has long been recognized across the region and documented in studies including the MTC Core Capacity Transit Study. The Train Control Modernization Program will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

NHS Improvements ☐ YES ☒ NO	Roadway Class NA	Reversible Lane Analysis ☐ YES ☒ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Intersection / Signal improvements	EA	1

Date 07/13/2020 11:58:42

Additional Information

Project Milestones: Right-of-way acquisition milestones are not application to the TCMP.
Performance Indicators and Measures: As a transit project, some indicators and metrics listed are not applicable. See the SCCP narrative for more information on Performance Indicators and Measures.

PPR ID
ePPR-6000-2021-0004 v1

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPF, LPPC, SCCP	Project Area, Corridor, County, or Regionwide VMT per Capita and Total VMT	Total Miles	0	10,000,000,000	-10,000,000,000
			VMT per Capita	0	13.7	-13.7
	LPPF, LPPC, SCCP	Person Hours of Travel Time Saved	Person Hours	0	0	0
			Hours per Capita	63,543,065	0	63,543,065
	LPPF, LPPC, SCCP	Daily Vehicle Hours of Delay	Hours	0	0	0
System Reliability	LPPF, LPPC, SCCP	Peak Period Travel Time Reliability Index	Index	0	0	0
	LPPF, LPPC, SCCP	Transit Service On-Time Performance	% "On-time"	91.2	89	2.2
Air Quality & GHG	LPPF, LPPC, SCCP, TCEP	Particulate Matter	PM 2.5 Tons	15.46	18.11	-2.65
			PM 10 Tons	0	16.44	-16.44
	LPPF, LPPC, SCCP, TCEP	Carbon Dioxide (CO2)	Tons	0	3,330,494	-3,330,494
	LPPF, LPPC, SCCP, TCEP	Volatile Organic Compounds (VOC)	Tons	7.29	504.05	-496.76
	LPPF, LPPC, SCCP, TCEP	Sulphur Dioxides (SOx)	Tons	0	32.91	-32.91
	LPPF, LPPC, SCCP, TCEP	Carbon Monoxide (CO)	Tons	16.86	12,046	-12,029.14
	LPPF, LPPC, SCCP, TCEP	Nitrogen Oxides (NOx)	Tons	135.45	742.46	-607.01
Safety	LPPF, LPPC, SCCP, TCEP	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPF, LPPC, SCCP, TCEP	Number of Fatalities	Number	14.7	76.9	-62.2
	LPPF, LPPC, SCCP, TCEP	Fatalities per 100 Million VMT	Number	0.00006	0.00006	0
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries	Number	66.7	3,162.8	-3,096.1
	LPPF, LPPC, SCCP, TCEP	Number of Serious Injuries per 100 Million VMT	Number	0.0029	0.0029	0
Accessibility	LPPF, LPPC, SCCP	Number of Jobs Accessible by Mode	Number	3,336	1,924	1,412
	LPPF, LPPC, SCCP	Number of Destinations Accessible by Mode	Number	0	0	0
	LPPF, LPPC, SCCP	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	33	33	0
Economic Development	LPPF, LPPC, SCCP, TCEP	Jobs Created (Direct and Indirect)	Number	12,540	0	12,540
Cost Effectiveness	LPPF, LPPC, SCCP, TCEP	Cost Benefit Ratio	Ratio	1.6	0	1.6

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0004 v1

District	County	Route	EA	Project ID	PPNO
04	Alameda, Contra Costa, San Francisco				

Project Title

Train Control Modernization Project (CBTC)

Existing Total Project Cost ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON								
TOTAL								

Implementing Agency
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans
San Francisco Bay Area Rapid Trans

Proposed Total Project Cost ($1,000s)								
E&P (PA&ED)								
PS&E	12,129							12,129
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		1,065,871						1,065,871
TOTAL	12,129	1,065,871						1,078,000

Notes

Fund #1:	Other State - Transit and Intercity Rail Capital Program (TIRCP) (Committed)							
Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON								
TOTAL								

Program Code

Funding Agency

Proposed Funding ($1,000s)								
E&P (PA&ED)								
PS&E								
R/W SUP (CT)								
CON SUP (CT)								
R/W								
CON		318,600						318,600
TOTAL		318,600						318,600

Notes

Fund #2:	Local Funds - Bart Revenue (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E	12,129							12,129	
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		40,797						40,797	
TOTAL	12,129	40,797						52,926	

Fund #3:	Local Funds - Measure RR (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		309,234						309,234	
TOTAL		309,234						309,234	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 06/2020)

PPR ID
ePPR-6000-2021-0004 v1

Fund #4:	FTA Funds - FTA - 5309(b) - New Starts Small Starts and Core (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		397,240						397,240	
TOTAL		397,240						397,240	

Fund #5:	State SB1 SCCP - Solution for Congested Corridors Program (Uncommitted)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	21-22	22-23	23-24	24-25	25-26	26-27+	Total	Funding Agency
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									

APPENDIX II—Performance Indicators and Measures

APPENDIX II—PERFORMANCE INDICATORS AND MEASURES

Measure	Metric	Build	Future No Build	Change	Methodology	Data/Assumptions
Congestion Reduction	Project Area, Corridor, County, or Regionwide VMT per capita and total VMT	0	Total: 10.7 million Per trip: 13.7	Total: 10.7 million Per trip: 13.7	Cal-B/C v. 7.2: Per trip length x (new person trips on rail * percent trips from parallel highway / vehicle occupancy factor)	***Annual Person-Trips*** — No Build / Build Base (Year 1): 127,086,130 / 171,152,768 Forecast (Year 20): 127,086,130 / 186,252,468 ***Percent Trips during Peak***: 100% ***Percent New Trips from Parallel Highway***: 79% Maximum person-trips occur by Year 7 Average trip distance of auto trips replaced with project = 13.7 miles
	Person Hours of Travel Time Saved	63,543,065	0	63,543,065	Cal-B/C v. 7.2: Travel time savings per trip x (existing users + .5 x new users)	Travel time savings per trip = 1.5 minutes, based on reduction of headways between trains
System Reliability	Transit Service On-Time Performance	90.1% - 91.2%	89% (as of 2017)	10% - 20% reduction in delays from TCMP implementation	Current On Time Performance (2017 %) + % of delays that were due to train control (10% - 20%)	In 2017, the On-Time performance was 89%. It is assumed that this on-time performance will continue if project is not implemented. Future Build case On-Time performance is estimated to be 10% - 20% better than current (2017) because 10% - 20% of delays in 2017 were due to train control issues.
Safety	Number of Fatalities over 20-year analysis period	Auto: 0 Rail: 14.7 Total: 14.7	Auto: 64.3 Rail: 12.6 Total: 76.9	Auto: -64.3 Rail: 2.1 Total: -62.2	Cal-B/C v. 7.2: fatality rate per million VMT x annual VMT / 1,000,000	Cal-B/C v. 7.2: Statewide auto fatality rate = 0.006 per million VMT Passenger rail fatality rate = 0.0555 per million VMT
	Number of Serious Injuries over 20-year analysis period	Auto: 0 Rail: 66.7 Total: 66.7	Auto: 3105.5 Rail: 57.3 Total: 3162.8	Auto: -3105.5 Rail: 9.4 Total: 3096.1	Cal-B/C v. 7.2: injury rate per million VMT x VMT / 1,000,000	Cal-B/C v. 7.2: Statewide injury rate = 0.29 per million VMT Passenger rail injury rate = 0.2519 per million VMT

<table>
<tr><td></td><td>Number or Rate of Property Damage Only and Non-Serious Injury Collisions over 20-year analysis period</td><td>Auto: 0
Rail: 73.5
Total: 73.5</td><td>Auto: 5,889.8
Rail: 63.1
Total: 5952.9</td><td>Auto: -5,889.8
Rail: 10.4
Total: -5879.4</td><td>Cal-B/C v. 7.2: PDO rate per million VMT x VMT / 1,000,000</td><td>Cal-B/C v. 7.2: Statewide PDO rate = 0.55 per million VMT
Passenger rail PDO rate = 0.2775 per million VMT</td></tr>
<tr><td></td><td>Accident Cost Savings</td><td>$550 million</td><td>0</td><td>$550 million</td><td>Cal-B/C v. 7.2: Change in fatalities, injuries, & PDO collisions x recommended $ values per type of collision</td><td>Cal-B/C v. 7.2:
<table><tr><th>Event</th><th>Pass Train</th><th>Auto</th></tr><tr><td>Fatality</td><td>$9,800,000</td><td>$10,800,000</td></tr><tr><td>Injury</td><td>$180,500</td><td>$148,800</td></tr><tr><td>Prop Damage</td><td>$78,800</td><td>$9,700</td></tr></table></td></tr>
<tr><td>Economic Development and Job Creation</td><td>Jobs Created (Direct and Indirect)</td><td>$60 million SCCP investment = 660 jobs

$1.14 billion overall TCMP investment = 12,540 jobs</td><td>NA</td><td>660 jobs for SCCP investment

12,540 jobs for overall TCMP investment</td><td>Caltrans uses 11 jobs per $1 million invested in 2018 Executive Fact Book</td><td>Caltrans Executive Factbook</td></tr>
<tr><td rowspan="7">Air Quality & Greenhouse Gas Emissions</td><td>Particulate Matter 2.5 (PM 2.5)</td><td>0</td><td>16.44</td><td>-16.44</td><td rowspan="7">Calculated in Cal-B/C v. 7.2</td><td rowspan="7">Based on change in auto VMT from trips replaced with transit (see above), as well as on new rail VMT associated with new service
<table><tr><td>Annual Vehicle-Miles</td><td>No Build</td><td>Build</td></tr><tr><td>Base (Year 1)</td><td>11,366,126</td><td>13,237,856</td></tr><tr><td>Forecast (Year 20)</td><td>11,366,126</td><td>13,237,856</td></tr><tr><td>Average Vehicles/Train</td><td>8</td><td>9</td></tr></table></td></tr>
<tr><td>Particulate Matter 10 (PM 10)</td><td>15.46</td><td>18.11</td><td>-2.65</td></tr>
<tr><td>Carbon Dioxide (CO2)</td><td>0</td><td>3,330,494.57</td><td>-3,330,494.57</td></tr>
<tr><td>Volatile Organic Compounds (VOC)</td><td>7.29</td><td>504.05</td><td>-496.76</td></tr>
<tr><td>Sulphur Dioxides (SOX)</td><td>0</td><td>32.91</td><td>-32.91</td></tr>
<tr><td>Carbon Monoxide (CO)</td><td>16.86</td><td>12,046.20</td><td>-12,029.34</td></tr>
<tr><td>Nitrogen Oxides (NOX)</td><td>135.45</td><td>742.46</td><td>-607.02</td></tr>
</table>

	Total	175.05	3,343,854.74	-3,343,679.69		
Cost Effectiveness	Cost Benefit Ratio	1.6	N/A	1.6	Cal-B/C v. 7.2	As indicated elsewhere in table and in accompanying Excel file

Efficient Land Use	Land Use Efficiency Supplement's Land Use Efficiency Indicators	• The project is located in a jurisdiction that has adopted:
		  ○ A by-right (nondiscretionary) approval process for multifamily residential development
		  ○ A density bonus ordinance whose allowable density increase exceeds the requirements of State Density Bonus Law
		• The project is located within a half-mile of a high-quality transit corridor and major transit stop,, as defined by Public Resources Code sections 21155 and 21064.3
		• The project furthers the forecasted development pattern of the applicable Regional Transportation Plan's Sustainable Communities Strategy
		• In 2016, the BART Board of Directors adopted an affordable housing policy and performance targets setting a goal of 35 percent affordable housing on its station sites which could result in an additional 7,000 affordable units over the next ten years
		Pursuant to CA Public Utilities Code 29010 (AB2923 2923, Chiu/Grayson, 2018), by July 1, 2022, local jurisdictions are required to ensure that all developable BART-owned property near stations in Alameda, Contra Costa, and San Francisco Counties will have zoning consistent with BART's 2017 TOD Guidelines				

Accessibility	Number of Jobs Accessible by Mode and Access to Key Destinations by Mode	3,336 Jobs (average of 8 stations)	1,924 Jobs (average of 8 stations)	+ 1,412 Jobs accessible by BART	Using an average walking time of 3 mph, it will take passengers 5 minutes to walk 0.25 miles to the station (No Build). The TCMP saves 1.5 minutes due to shorter headways, equating to an extra 0.075 miles distance to the station (Build).	Analysis using U.S. Census Bureau's Local Employment Household Dynamics On-the-Map tool. All employment numbers from 2017. Assumed an average walking time of 3mph. The number of jobs was found by taking the average of the areas around 8 BART stations in the Corridor (Embarcadero, Montgomery, Powell, Civic Center/UN Plaza, West Oakland, 12th Street/Oakland, 19th Street/Oakland, MacArthur).
	% of Population Defined as Low Income or Disadvantaged within ½ mile of rail station,	33% Low Income within a ½ mile of BART station	33% Low Income with a ½ mile of BART Station	No Change	The total population within ½ mile of BART stations (full system, partial census tract) is 429,416. The	Low Income Census Tract Data, Census Bureau

	ferry terminal, or high-frequency bus stop				population defined as low income within ½ mile of BART stations (full system, partial census tract) is 142,610. 142,610 / 429,416 = 33.2%	

APPENDIX III—STATE HIGHWAY SYSTEM PROJECT IMPACT ASSESSMENT (FORM CTC-0002)

STATE OF CALIFORNIA - CALIFORNIA TRANSPORTATION COMMISSION
STATE HIGHWAY SYSTEM PROJECT IMPACT ASSESSMENT APPENDIX III
CTC-0002 (NEW 9/2019)
Page 10

I. APPLICANT INFORMATION

1. NOMINATING AGENCY
Caltrans

2. NAME OF PERSON SUBMITTING THE NOMINATION	3. TITLE
4. PHONE	**5. EMAIL**

II. PROJECT INFORMATION

6. PROJECT TITLE
Train Control Modernization Program

7. PERCENT OF PROJECT AREA WITHIN STATE R/W	8. TOTAL CONSTRUCTION COST WITHIN STATE R/W
0%	0%

9. ANTICIPATED ENVIRONMENTAL DOCUMENT FOR:
CEQA: Statutory Exemption NEPA: Categorical Exclusion

10. CHECK ALL OF THE FOLLOWING THAT APPLY:

- ☐ PROJECT IS NOT IN AND WILL NOT DISCHARGE INTO AN ENVIRONMENTALLY SENSITIVE AREA AND IS NOT EXPECTED TO NEED AN EIR/EIS
- ☐ PROJECT DOES NOT REQUIRE FHWA COORDINATION OR APPROVAL
- ☐ PROJECT DOES NOT REQUIRE RIGHT OF WAY DEDICATION FROM CALTRANS
- ☐ PROJECT DOES NOT REQUIRE CALTRANS STRUCTURE DESIGN APPROVAL FOR MODIFICATION TO A CALTRANS BRIDGE OR STRUCTURE.
- ☐ PROJECT DOES NOT REQUIRE DESIGN EXCEPTIONS TO MANDATORY DESIGN STANDARDS *(REF. HIGHWAY DESIGN MANUAL, DESIGN INFORMATION BULLETIN 78)*
- ☐ PROJECT DOES NOT REQUIRE ENCHROACHMENT EXCEPTIONS APPROVAL *(REF. ENCHROACHMENT PERMIT MANUAL, CH. 300)*

11. DESCRIBE THE SCOPE OF WORK TO BE DONE WITHIN STATE HIGHWAY RIGHT-OF-WAY
Not Applicable

12. EXPECTED LEVEL OF CALTRANS INVOLVEMENT:

☐ **Cooperative Agreement Oversight Process:** *Cooperative Agreement oversight process reviews are generally used for projects with a construction cost within the State Right of Way greater than $1 Million.*

☐ **Encroachment Permits Oversight Process:** *Office of Encroachment Permits oversight process reviews are generally used for projects with a construction cost within the State Right of Way of $1 Million or less.*

III. CALTRANS PROJECT SUPPORT

SIGNATURE: _____ **DATE:** _____

PRINT NAME: _____

Deputy District Director Program Project Management

The above signature indicates, based on available information:

1. Caltrans supports the project;
2. The project is consistent with Caltrans's standards;
3. Durations and start and end dates to achieve the major milestones are reasonable;
4. The funding plan is reasonable.

IV. ATTACHMENTS

The Project Programming Request must be provided to Caltrans with this form. Additional information may be required by Caltrans, including, but, not limited to: (1) project level documents and (2) draft funding application(s).

Appendix IV: Application Letters of Support

- Elected Officials
- City of San Francisco
- City of Oakland
- San Francisco Transit Riders
- Bay Area Council
- Low Income Investment Fund
- Coalition for Clean Air
- Greenbelt Alliance
- The Unity Council

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0115

California Legislature

June 19, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: San Francisco Bay Area Rapid Transit District's application to the Solutions for Congested Corridors Program

Dear Mr. Weiss:

As representatives of the San Francisco Bay Area, we write to express our support for the San Francisco Bay Area Rapid Transit District's (BART) application to the 2020 Solutions for Congested Corridors Program (SCCP). The California Department of Transportation and Metropolitan Transportation Commission have nominated BART's Train Control Modernization Program (TCMP), a component of the Transbay Corridor Core Capacity Program, for the SCCP and have ranked it the highest out of the region's applications.

The TCMP will allow BART to increase the number of trains operating within the Transbay Tube from 23 to 28 trains per hour, helping to relieve congestion within the heavily utilized the corridor. The project will reduce onboard train crowding by over 30%, increase reliability and decrease system delays, boost transit ridership, relieve highway congestion, and support sustainable growth around BART stations.

The SCCP grant proposal is for the final $60 million needed to fully fund the TCMP segment through the Transbay Tube. This funding will leverage more than $1 billion in local, state and federal funding, which will support the entire Core Capacity Program including 252 new rail cars, rail car storage at the Hayward Maintenance Complex, and new traction power substations.

This project is vital to the modernization of the 40+ year old BART system and enhanced reliability for Bay Area commuters. We thank you for your consideration of BART's application and welcome the state's ongoing support of the Bay Area's transportation infrastructure.

Sincerely,

Bill Quirk

Bill Quirk
Assemblymember, District 20

David Chiu
Assemblymember, District 17

Kevin Mullin
Assemblymember, District 22

Phil Ting
Assemblymember, District 19

Buffy Wicks
Assemblymember, District 15

Jerry Hill
Senator, District 13

Scott Wiener
Senator, District 11

OFFICE OF THE MAYOR
SAN FRANCISCO

LONDON N. BREED
MAYOR

June 5, 2020
Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

I am writing to request your support of the Bay Area Rapid Transit District's (BART's) grant application for the California's Solutions for Congested Corridors Program. The reliability of public transportation is an important priority for our City and one where I have been personally invested as Mayor. On an average weekday, over 180,000 people travel into San Francisco on BART. While our current, unprecedented situation has changed those numbers, I have no doubt that they will return in the future. We want to be prepared to handle that recovery and expected future growth. BART's Transbay Corridor Core Capacity Project will help us ensure we are prepared to do so, while reducing congestion and greenhouse gas emissions.

San Francisco is a focal point for the region's jobs, healthcare, education, culture, and more. Our success relies staying connected, and BART plays a critical role in doing so. This proposed grant will help fund an expansion of transit service through the Transbay Tube, which will ensure that people throughout the region can access important services and patron our businesses, but also ensure our employers have access to talent from across the Bay Area.

Thank you for the California Transportation Commission's continued commitment to modernizing and maintaining our public transportation system. I respectfully urge you to recommend the award of California's Solutions for Congested Corridors Program funds to this project. I look forward to your response and thank you for your consideration.

Sincerely,

London N. Breed
Mayor

1 DR. CARLTON B. GOODLETT PLACE, ROOM 200
SAN FRANCISCO, CALIFORNIA 94102-4681
TELEPHONE: (415) 554-6141

CITY OF OAKLAND

1 FRANK H. OGAWA PLAZA • 3RD FLOOR • OAKLAND, CALIFORNIA 94612

Office of the Mayor
Libby Schaaf

(510) 238-3141
FAX: (510) 238-4731
TDD: (510) 238-3254

May 19, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

On behalf of the City of Oakland, I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application. The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and encouraging mass transit options.

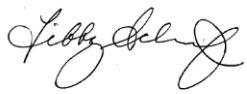
As the mayor of Oakland, I strongly support public transit service as an equitable and environmentally sustainable way to provide mobility for our community. We strongly believe increasing public transit ridership, particularly along the Transbay Corridor, is essential to improve air quality for residents in our frontline communities of West Oakland and East Oakland. We also believe that by improving transit service, our disadvantaged residents will gain improved access to jobs and housing opportunities across the bay area. We also recognize that improving BART's core capacity through the TCMP will complement both BART and the City's shared vision for transit-oriented development through BART's TOD projects at MacArthur Village, West Oakland BART, Fruitvale and Lake Merritt Stations.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long-term ridership trends at BART require additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving. This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will

benefit from increased capacity and reduced crowding, as well as reduced greenhouse gas emissions from fewer drivers on the road.

I fully support BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program. If you have any questions regarding our support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,



Libby Schaaf,
Mayor of the City of Oakland

San Francisco Transit Riders
P.O. Box 193341, San Francisco, CA 94119
www.sftransitriders.org | hello@sftransitriders.org | @SFTRU

June 5, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

San Francisco Transit Riders is the city's independent, nonprofit advocate for efficient, accessible, and always growing public transit.

I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application.

The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and encouraging mass transit options.

We recognize that under normal circumstances, BART is at or past capacity during peak periods along the transbay corridor. We also know that the Bay Bridge is similarly congested, and that two-thirds of the people crossing the Bay are doing so on BART. We are running out of space, and urgently need increased capacity on BART in order to enable the mobility of Bay Area residents. We see the TCMP as a cost effective and necessary improvement to increase capacity in the relative near term.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long term ridership trends at BART show the need for additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving.

San Francisco Transit Riders
P.O. Box 193341, San Francisco, CA 94119
www.sftransitriders.org | hello@sftransitriders.org | @SFTRU

This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will benefit from increased capacity and reduced crowding, as well as reduced greenhouse gas emissions as more people can opt for BART over driving private cars.

San Francisco Transit Riders fully supports BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program.

If you have any questions regarding our support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,

Cat Carter
Interim Executive Director
San Francisco Transit Riders

BAYAREA COUNCIL
Shape the Future

May 21, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

On behalf of the Bay Area Council—a member based non-profit representing over 300 businesses in the Bay Area—I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application. The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and encouraging mass transit options.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long-term ridership trends at BART require additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving. This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will benefit from increased capacity and reduced crowding, as well as reduced greenhouse gas emissions from fewer drivers on the road.

I fully support BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program. If you have any questions regarding our support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,

Gwen Litvak
Senior Vice President, Public Policy
Bay Area Council

capital for healthy
families & communities

June 9, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

On behalf of Low Income Investment Fund (LIIF), I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application. The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and encouraging mass transit options.

Transit-oriented development (TOD) is a primary focus area for LIIF. We use our expertise to leverage public and private dollars to provide our community-based partners and mission driven developers innovative financing solutions that address the unique and complex challenges of TOD projects. Since our inception, LIIF has deployed over $206MM to support TOD initiatives; in the process, we have helped create over 13,800 TOD affordable housing units.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long-term ridership trends at BART require additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving. This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will benefit from increased capacity and reduced crowding, as well as reduced greenhouse gas emissions from fewer drivers on the road.

LIIF fully supports BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program. If you have any questions regarding LIIF's support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,

Lucy Arellano Baglieri
Chief Strategy Officer

COALITION FOR CLEAN AIR

June 10, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814

Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

On behalf of Coalition for Clean Air, I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application. The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and air pollution, and encouraging mass transit options.

Founded in 1971, the Coalition for Clean Air is the only statewide non-profit organization focused on clean air. The Coalition for Clean Air's (CCA) mission is to protect public health, improve air quality, and prevent climate change. CCA works to reduce emissions from the transportation sector - the largest source of health-damaging and climate-disrupting air pollution in California - with a particular focus on reducing vehicle miles traveled.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long-term ridership trends at BART require additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving. This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will benefit from increased capacity and reduced crowding, as well as reduced air pollution and ghg's from fewer drivers on the road.

We fully support BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program. If you have any questions regarding our support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,

THE UNITY COUNCIL

Monday, May 18, 2020

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street MS-52
Sacramento, CA 94814
Subject: Bay Area Rapid Transit District's application to California's Solutions for Congested Corridors Program

Dear Mr. Weiss,

On behalf of The Unity Council, I am writing in support of Bay Area Rapid Transit's (BART's) Transbay Corridor Core Capacity Project – Train Control Modernization Program (TCMP) application for the 2020 Solutions for Congested Corridors Program application. The TCMP will benefit the Transbay Corridor, one of the most highly congested corridors in the region. Once complete, BART's Transbay Corridor Core Capacity Project, and specifically implementation of the TCMP, will positively impact this crucial Bay Area transportation corridor by reducing congestion and increasing transit ridership, as well as benefit the health and quality of life of residents by reducing greenhouse gas emissions and encouraging mass transit options.

The Unity Council is a 56-year old Social Equity Development Corporation based in East Oakland's Fruitvale neighborhood. We support families through early childhood education, workforce development, senior services and housing and built the Fruitvale Transit Village, an award winning transit-oriented development next to the Fruitvale BART station.

BART's Train Control Modernization Program will enable BART to increase the number of trains operating through the Transbay Tube from 23 to 28 trains per hour. Long-term ridership trends at BART require additional capacity, which has long been recognized at the Metropolitan Transportation Commission (MTC). The TCMP will enable BART to operate trains with the shorter headways necessary to deliver 28 trains per hour and keep the Bay Area moving. This project will improve BART's quality of service, reduce crowding for riders, and support continued growth of the BART system. Disadvantaged communities, priority development communities, and all communities along the BART system will benefit from increased capacity and reduced crowding, as well as reduced greenhouse gas emissions from fewer drivers on the road.

The Unity Council fully support BART in its efforts to bring these benefits to the Bay Area through implementation of the Transbay Corridor Core Capacity Project – Train Control Modernization Program. If you have any questions regarding our support, please reach out to me directly. Thank you in advance for your consideration of this project.

Sincerely,

Chris Iglesias
Chief Executive Officer

The Unity Council
1900 Fruitvale Ave, Suite 2A, Oakland, CA 94601
510-535-6900 Office • 510-534-7771 Fax • www.unitycouncil.org

Julia Randolph
Policy and Outreach Associate

Appendix V: TCMP Ridership Modeling and Methodology

APPENDIX V. TRANSBAY CORE CAPACITY PROGRAM RIDERSHIP FORECAST

TECHNICAL REFERENCE MATERIAL

The Transbay Corridor Core Capacity Program of the Bay Area Rapid Transit District (BART) will increase the throughput capacity in the most heavily used part of the BART system by increasing the number of trains operating through the Transbay Tube and the number of cars on those trains. This technical memorandum reports the projected ridership gains expected from the increased number of trains and train lengths, and describes the data, assumptions and methodology used to develop ridership projections.

INTRODUCTION

On the main trunk of the its system, from the Oakland wye through the Transbay Tube to Daly City, BART currently operates a maximum of 23 trains per hour in the peak direction, with an average of 8.9 cars per train, for a total of 204.9 cars per hour.

The Transbay Corridor Core Capacity Program includes four elements: acquisition of 306 new rail cars, construction of Hayward Maintenance Complex Phase 2 storage facility, installation of communications-based train control system, and creation of five new traction power substations. Collectively, these four elements will allow BART to increase the service frequency from four trains per hour to five trains per hour on each of BART's five rail lines, and to operate 30 trains per hour, with an average of 10 cars per train, for a total of 300 cars per hour during the peak period through the Transbay Tube.

BART anticipates completing implementation in late FY 2026, with FY 2027 as the first full year of increased frequency operations from the completed Core Capacity Program.

DATA

The projected ridership in this memorandum is primarily based on the following two data sets.

1. BART Ridership Forecast for FY 2018 through FY 2040 (see Appendix A), which includes average weekday and total annual systemwide ridership, made available by the BART staff, and
2. BART Monthly Ridership Reports, providing actual average ridership by type of day (weekday, Saturday, and Sunday), available on BART website at http://bart.gov/ridership

ASSUMPTIONS

The projections are based on the following assumptions.

1. The horizon year for ridership projection is FY 2076. This is based on a planning horizon of 50 years, with FY 2027 as the first full year of operations after the completion of the Core Capacity Program. The Core Capacity Program includes acquisition of vehicles, civil construction and the installation of systems that are

WSP USA
17th Floor
425 Market Street
San Francisco, CA 94105

Tel.: +1 415 243 4600
Fax: +1 916 243-9501
wsp.com

expected to have an average service life of 50 years, based on BART experience with existing facilities and equipment. BART experience includes mid-life overhaul of vehicles to extend their service life.

1. The average weekday systemwide ridership of 435,973, recorded in June 2016, is constrained by the capacity of the current system.

METHODOLOGY

The major steps in the process for developing the projected ridership for the Core Capacity Program are as follows:

EXISTING RIDERSHIP

During peak periods on weekdays, current ridership exceeds capacity in the Transbay Corridor. The average weekday systemwide ridership of 435,973, recorded in June 2016, occurred at a time when BART ridership was exceeding capacity in the Transbay Corridor during the peak periods. Analyses performed by BART for the Federal Transit Administration (FTA) found that the average amount of floor space per passenger was less than 5.4 square feet – the crowding standard FTA has adopted for Core Capacity funding based upon TCRP Transit Capacity and Quality of Service Manual – during the peak hour between the Embarcadero station in San Francisco and the Berkeley, Rock Ridge, and Bay Fair stations in the East Bay. Figure 1 illustrates the results of BART's analysis for FTA.

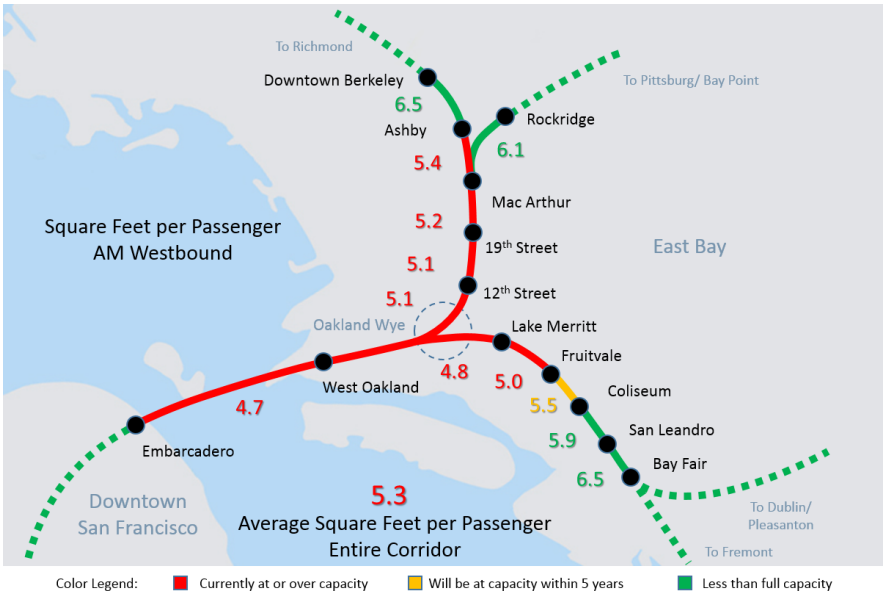


Figure 1. Square Feet per Passenger in AM Peak Hour

To predict the ridership benefits of the Transbay Core Capacity Program, the June 2016 level of 435,973 riders per day was established as the constrained baseline, as further described below. The capacity of the system through the Transbay Tube will stay constrained until the completion of the Core Capacity Program.

UNCONSTRAINED RIDERSHIP FORECAST TO FY 2040

BART has developed ridership forecast for FY 2018 to FY 2040. The forecast accounts for increases in ridership over time that can be expected to result from anticipated population and employment growth and system expansion, such as the BART extension to Silicon Valley (Berryessa extension will open in 2018) and the eBART extension in eastern Contra Costa County (expected to open in 2018). However, the BART ridership forecast does not account for ridership gains from the increased service frequency that will result from the Core Capacity Program. In

addition, the forecast is not constrained by the capacity of the BART system. The forecast average weekday systemwide unconstrained ridership for the first year of BART forecast (FY 2018), the first full year of operations after the completion of the Core Capacity Program (FY 2027), and the last year of BART forecast (FY 2040) are 431,079, 510,006 and 621,873, respectively (see Figure 2).

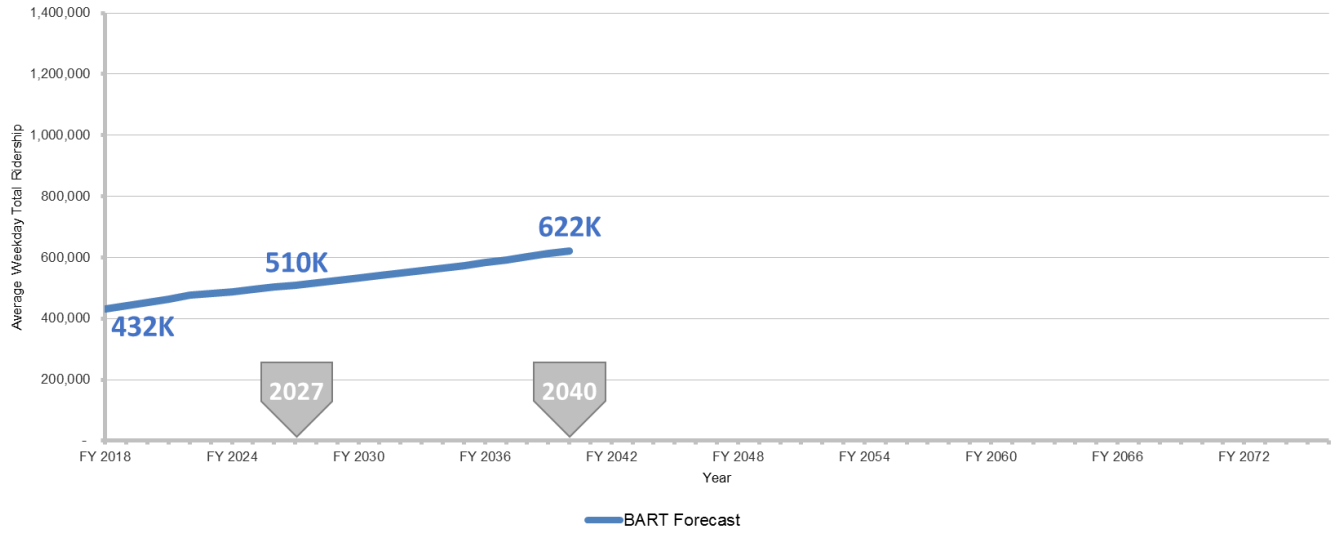


Figure 2: Unconstrained Ridership Forecast to FY 2040

UNCONSTRAINED RIDERSHIP EXTRAPOLATED TO FY 2076

Developing the ridership projections for the Core Capacity Program requires an unconstrained ridership baseline extending up to the planning horizon of FY 2076. However, the BART forecast does not extend up to FY 2076. Therefore, BART ridership forecast is extrapolated to FY 2076 using the average growth rate for the last five years of the forecast period (FY 2036 to FY 2040), which is calculated to be 1.6 percent. This results in an average weekday systemwide unconstrained extrapolated ridership of 1,106,906 for FY 2076 (see Figure 3).

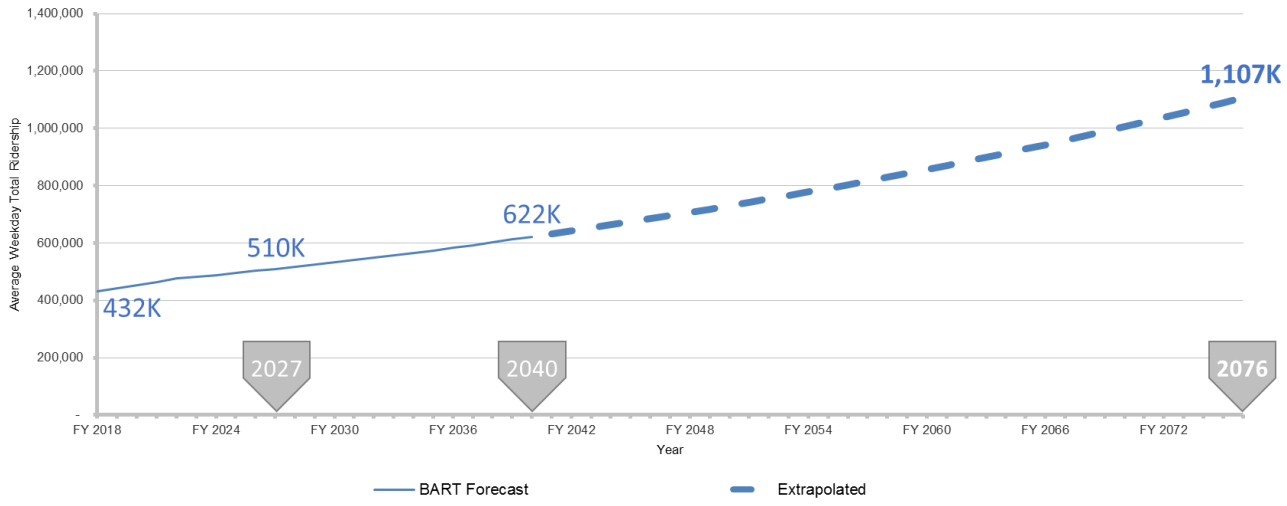


Figure 3: Unconstrained Ridership Extrapolated to FY 2076

CAPACITY-CONSTRAINED BASELINE RIDERSHIP

The current BART system does not have enough capacity to accommodate this unconstrained ridership. Therefore, the forecast and extrapolated ridership are constrained for capacity based on the June 2016 average weekday systemwide ridership of 435,973. This results in a baseline average weekday systemwide constrained ridership of 435,973 for all years except for FY 2018 (see Figure 4).

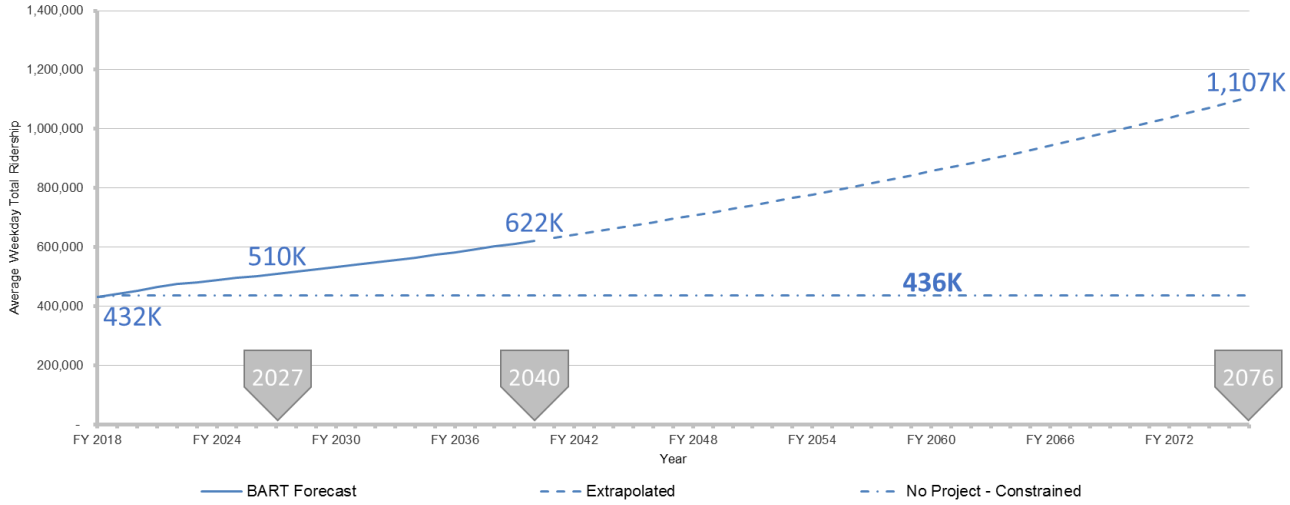


Figure 4: Capacity-Constrained Baseline Ridership

An implicit assumption in this analysis is that the peak hour constraint will not lead to greater peak spreading, with riders switching their travel to the shoulders of the peak when the trains are less crowded, and that there will not be increased off-peak travel on BART over time. This same assumption is made in the forecast of future ridership with implementation of the Core Capacity Program.

UNCONSTRAINED RIDERSHIP WITH INCREASED FREQUENCY FROM CORE CAPACITY PROGRAM

The Core Capacity Program will allow BART to increase the service frequency by 25 percent (from four trains per hour to five trains per hour) on each of the five lines of the entire BART system. To estimate the ridership increase associated with this increase in frequency of service, elasticity of BART ridership with respect to frequency is required.

To determine the estimated ridership increase from planned service frequency increases from the Core Capacity program, a research task was undertaken to find comparable types of transportation (modes) to BART and create a range. This research is shown in Table 1.

Table 1. Frequency and Ridership Increases

A 1% increase in:	***Expect ridership increase:***	**Mode**	**Source**
Service frequency/headway elasticity	+0.5%	Transit (General)	Journal of Public Transportation, Vol. 7, No. 2, 2004 – Page 48
Service frequency for commuter rail (frequency less than 50 min	+0.4%	Commuter Rail (Maximum)	Transit Capacity and Quality of Service Manual—2nd Edition – Page 1-11
Service frequency for commuter rail (frequency less than 50 min)	+0.6%	Commuter Rail (Minimum)	Transit Capacity and Quality of Service Manual—2nd Edition – Page 1-11
Service frequency in mainly central city urban environment	+0.3%	Heavy Rail	Transit Capacity and Quality of Service Manual—2nd Edition Page 1-11
Number of peak period trains	+0.48%	BART/Heavy Rail	Fehr and Peers, 2004
Service frequency	+0.08%	London Underground/Rail Rapid Transit	Transit Cooperative Research Program, TCRP Report 95, FTA, 2003 (CHAPTER 9)
Service frequency	+.15%	Direct Frequency from LA Metro Model	Internal WSP model

A straight average was estimated to show the most likely ridership increase from a 1% increase in frequency, as well as an lower and upper bound. Results are included below:

- Low ridership growth - +0.08%
- Most likely ridership growth - +0.35%
- High ridership growth – 0.6%

Increases in ridership were not estimated for decreases in station or train crowding, increased comfort, or other potential causes in increased ridership.

Based on the most-likely elasticity of 0.35, it was estimated that the 25 percent increase in service frequency will lead to an 8.8 percent increase in ridership. Adding this to the unconstrained forecast predicted by BART leads to a projected average weekday systemwide unconstrained ridership for FY 2027, FY 2040, and FY 2076 are 554,631, 676,287, and 1,203,760, respectively (see Figure 5).

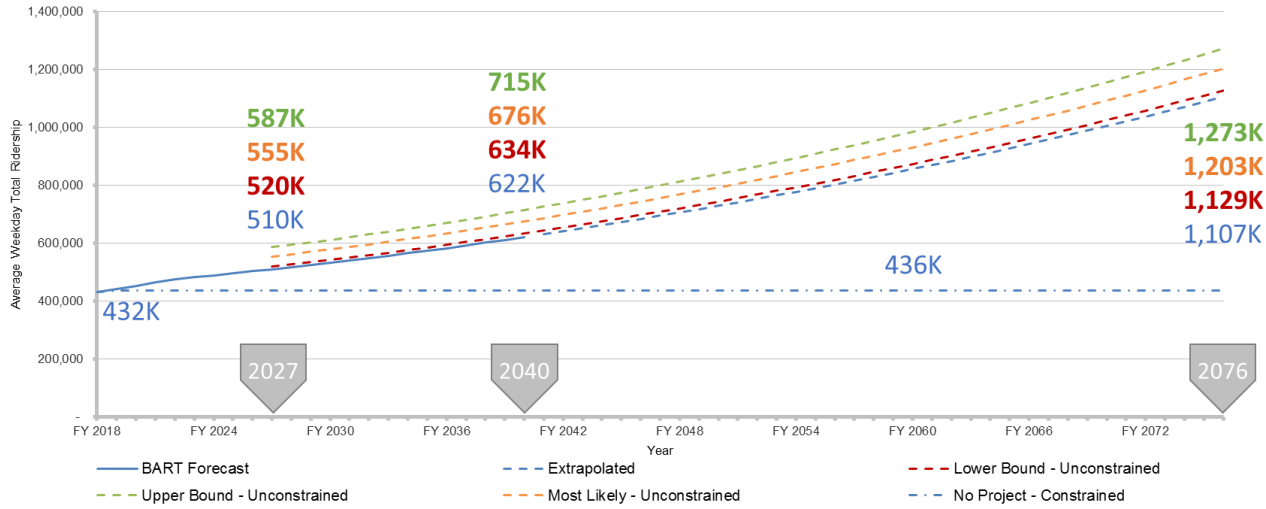


Figure 5: Unconstrained Projected Ridership with Increased Train Frequencies

This forecast of future ridership does not take into account other benefits of the Transbay Corridor Core Capacity Program that could lead to higher ridership, such as new rail cars and increased service reliability.

CAPACITY-CONSTRAINED PROJECTED RIDERSHIP

The Core Capacity Program will allow BART to increase the peak hour capacity through Transbay Tube by 46.6 percent (from 204.9 cars per hour to 300 cars per hour) during the peak period. Therefore, the capacity constrained ridership after the completion of the Core Capacity Program will be 46.6 percent higher than the current capacity constrained ridership. This leads to an average weekday systemwide capacity constrained ridership of 638,945 (see Figure 6).

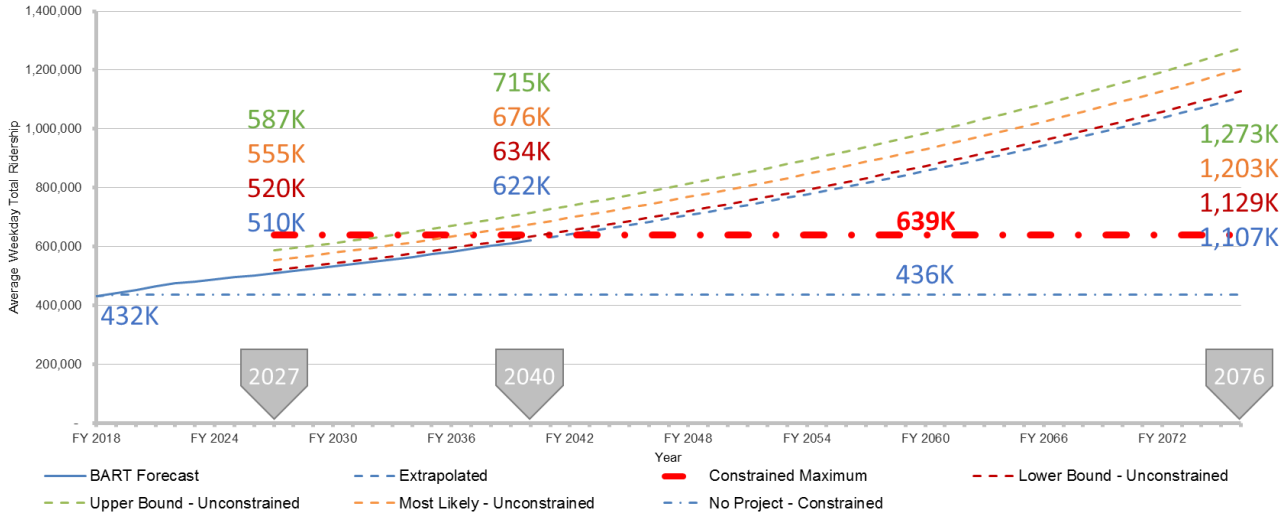


Figure 6: Capacity-Constrained Ridership

Applying this capacity-constrain to the projected unconstrained ridership reveals that the projected average weekday systemwide ridership will be constrained after FY 2037 (see Figure 7).

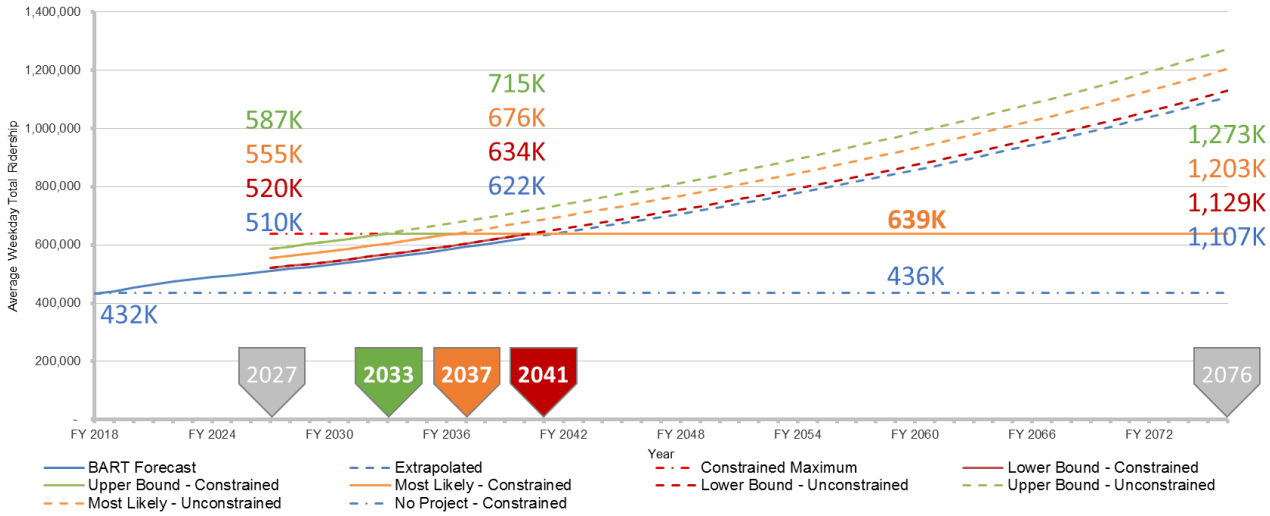


Figure 7: Capacity-Constrained Projected Ridership

The Table on the following page shows the inputs and results of the Ridership Methodology.

RESULTS AND STEPS FOR RIDERSHIP METHODOLOGY

RIDERSHIP DATA	UNIT	LOWER BOUND	UPPER BOUND	MOST LIKELY
Initial Headway (Frequency)	minutes (tph)	15 (4)		
Final Headway (Frequency)	minutes (tph)	12 (5)		
Change in Headway Frequency	percentage	25		
Frequency Ridership Elasticity	elasticity	0.08	0.60	0.35
Change in Ridership	percentage	2.0%	15.0%	8.8%
BART Forecast Total Ridership – Year 2026	average weekday trips	503 K		
First Year with Total Ridership – CONSTRAINED	Year	2041	2033	2037
Year 2027 (First Year with Frequency Change)				
BART Forecast Ridership without Frequency Change	average weekday trips	510 K		
Projected Ridership with Frequency Change - UNCONSTRAINED	average weekday trips	520 K	587 K	555 K
Increase in Ridership Due to Frequency Change - UNCONSTRAINED	average weekday trips	10 K	77 K	45 K
Year 2041 (Ridership Constrained for all Scenarios)				
BART Forecast Ridership Without Frequency Change	average weekday trips	632 K		
Projected Ridership with Frequency Change - UNCONSTRAINED	average weekday trips	645 K	727 K	687 K
Projected Ridership with Frequency Change - CONSTRAINED	average weekday trips	639 K		
Increase in Ridership Due to Frequency Change – UNCONSTRAINED	average weekday trips	13 K	95 K	55 K
Increase in Ridership Due to Frequency Change – CONSTRAINED	average weekday trips	7 K		
Year 2076 (Horizon Year)				
Extrapolated Ridership Without Frequency Change	average weekday trips	1,107 K		
Projected Ridership Due to Frequency Change - UNCONSTRAINED	average weekday trips	1,129 K	1,273 K	1,204 K
Projected Ridership Due to Frequency Change – CONSTRAINED	average weekday trips	639 K		
Increase in Ridership Due to Frequency Change – UNCONSTRAINED	Average weekday trips	22 K	166 K	97 K
Increase in Ridership Due to Frequency Change – CONSTRAINED	average weekday trips	-468 K		

APPENDIX A – BART RIDERSHIP FORECAST (FY 2018 – FY 2040)

	Average Weekday Passenger Trips				Total Annual Trips			
Year	**Core**	**SFO Extension**	**SBVX+SV SX**	**Total**	**Core**	**SFO Extension**	**SBVX+SV SX**	**Total**
FY18	374,997	50,028	6,684	431,709	109,180,489	14,725,847	1,945,943	125,852,279
FY19	374,555	50,079	16,283	440,917	109,051,546	14,740,857	4,740,890	128,533,293
FY20	382,516	51,276	19,440	453,232	111,369,406	15,093,017	5,660,088	132,122,511
FY21	389,620	52,059	22,848	464,527	113,437,952	15,323,709	6,652,103	135,413,764
FY22	396,092	52,878	26,521	475,491	115,322,214	15,564,600	7,721,679	138,608,493
FY23	400,706	53,658	27,708	482,072	116,665,671	15,794,108	8,067,127	140,526,907
FY24	405,380	54,458	28,948	488,786	118,026,489	16,029,566	8,428,263	142,484,318
FY25	410,118	55,271	30,245	495,633	119,405,791	16,268,878	8,805,809	144,480,478
FY26	415,047	56,108	31,601	502,755	120,840,836	16,515,431	9,200,521	146,556,788
FY27	420,032	56,956	33,018	510,006	122,292,347	16,764,908	9,613,192	148,670,447
FY28	424,846	57,823	34,500	517,169	123,693,844	17,020,267	10,044,651	150,758,763
FY29	429,722	58,709	36,049	524,480	125,113,443	17,281,133	10,495,766	152,890,343
FY30	434,583	59,605	37,669	531,858	126,528,853	17,544,779	10,967,446	155,041,078
FY31	439,993	60,547	39,363	539,903	128,104,062	17,821,916	11,460,641	157,386,618
FY32	445,478	61,509	41,135	548,122	129,700,931	18,105,128	11,976,348	159,782,407
FY33	451,048	62,491	42,987	556,526	131,322,696	18,394,256	12,515,609	162,232,561
FY34	456,749	63,504	44,924	565,177	132,982,443	18,692,462	13,079,516	164,754,421
FY35	462,527	64,539	46,949	574,015	134,664,649	18,997,027	13,669,212	167,330,888
FY36	468,515	65,604	49,067	583,186	136,408,249	19,310,453	14,285,893	170,004,595
FY37	474,602	66,688	51,282	592,572	138,180,307	19,629,714	14,930,813	172,740,833
FY38	480,680	67,795	53,599	602,074	139,949,986	19,955,390	15,605,282	175,510,659
FY39	486,844	68,926	56,022	611,791	141,744,691	20,288,290	16,310,676	178,343,656
FY40	493,241	70,077	58,555	621,873	143,607,075	20,627,158	17,048,431	181,282,665

Source: Model V

APPENDIX B – PROJECTED RIDERSHIP

Fiscal Year	BART Forecast	Extrapolated	No Project - Constrained	Lower Bound - Unconstrained	Upper Bound - Unconstrained	Most Likely - Unconstrained	Constrained Maximum	Lower Bound - Constrained	Upper Bound - Constrained	Most Likely - Constrained
2018	431,709	-	431,709	-	-	-	-	-	-	-
2019	440,917	-	435,973	-	-	-	-	-	-	-
2020	453,232	-	435,973	-	-	-	-	-	-	-
2021	464,527	-	435,973	-	-	-	-	-	-	-
2022	475,491	-	435,973	-	-	-	-	-	-	-
2023	482,072	-	435,973	-	-	-	-	-	-	-
2024	488,786	-	435,973	-	-	-	-	-	-	-
2025	495,633	-	435,973	-	-	-	-	-	-	-
2026	502,755	-	435,973	-	-	-	-	-	-	-
2027	510,006	-	435,973	520,206	586,507	554,631	638,945	520,206	586,507	554,631
2028	517,169	-	435,973	527,512	594,744	562,421	638,945	527,512	594,744	562,421
2029	524,480	-	435,973	534,970	603,152	570,372	638,945	534,970	603,152	570,372
2030	531,858	-	435,973	542,495	611,636	578,395	638,945	542,495	611,636	578,395
2031	539,903	-	435,973	550,701	620,889	587,145	638,945	550,701	620,889	587,145
2032	548,122	-	435,973	559,084	630,340	596,082	638,945	559,084	630,340	596,082
2033	556,526	-	435,973	567,657	640,005	605,222	638,945	567,657	638,945	605,222
2034	565,177	-	435,973	576,480	649,953	614,630	638,945	576,480	638,945	614,630
2035	574,015	-	435,973	585,495	660,117	624,241	638,945	585,495	638,945	624,241
2036	583,186	-	435,973	594,850	670,664	634,215	638,945	594,850	638,945	634,215
2037	592,572	-	435,973	604,424	681,458	644,422	638,945	604,424	638,945	638,945
2038	602,074	-	435,973	614,115	692,385	654,755	638,945	614,115	638,945	638,945
2039	611,791	-	435,973	624,027	703,560	665,323	638,945	624,027	638,945	638,945
2040	621,873	-	435,973	634,311	715,154	676,287	638,945	634,311	638,945	638,945

Fiscal Year	BART Forecast	Extrapolated	No Project - Constrained	Lower Bound - Unconstrained	Upper Bound - Unconstrained	Most Likely - Unconstrained	Constrained Maximum	Lower Bound - Constrained	Upper Bound - Constrained	Most Likely - Constrained
2041	-	631,914	435,973	644,552	726,701	687,206	638,945	638,945	638,945	638,945
2042	-	642,116	435,973	654,958	738,433	698,301	638,945	638,945	638,945	638,945
2043	-	652,483	435,973	665,533	750,356	709,575	638,945	638,945	638,945	638,945
2044	-	663,018	435,973	676,278	762,470	721,032	638,945	638,945	638,945	638,945
2045	-	673,722	435,973	687,197	774,781	732,673	638,945	638,945	638,945	638,945
2046	-	684,600	435,973	698,292	787,290	744,502	638,945	638,945	638,945	638,945
2047	-	695,653	435,973	709,566	800,001	756,522	638,945	638,945	638,945	638,945
2048	-	706,884	435,973	721,022	812,917	768,737	638,945	638,945	638,945	638,945
2049	-	718,297	435,973	732,663	826,042	781,148	638,945	638,945	638,945	638,945
2050	-	729,894	435,973	744,492	839,378	793,760	638,945	638,945	638,945	638,945
2051	-	741,679	435,973	756,512	852,930	806,575	638,945	638,945	638,945	638,945
2052	-	753,653	435,973	768,726	866,701	819,598	638,945	638,945	638,945	638,945
2053	-	765,821	435,973	781,137	880,694	832,830	638,945	638,945	638,945	638,945
2054	-	778,185	435,973	793,749	894,913	846,277	638,945	638,945	638,945	638,945
2055	-	790,749	435,973	806,564	909,362	859,940	638,945	638,945	638,945	638,945
2056	-	803,516	435,973	819,587	924,044	873,824	638,945	638,945	638,945	638,945
2057	-	816,489	435,973	832,819	938,963	887,932	638,945	638,945	638,945	638,945
2058	-	829,672	435,973	846,265	954,122	902,268	638,945	638,945	638,945	638,945
2059	-	843,067	435,973	859,928	969,527	916,835	638,945	638,945	638,945	638,945
2060	-	856,679	435,973	873,812	985,180	931,638	638,945	638,945	638,945	638,945
2061	-	870,510	435,973	887,920	1,001,086	946,679	638,945	638,945	638,945	638,945
2062	-	884,564	435,973	902,256	1,017,249	961,964	638,945	638,945	638,945	638,945
2063	-	898,846	435,973	916,823	1,033,673	977,495	638,945	638,945	638,945	638,945
2064	-	913,358	435,973	931,625	1,050,362	993,277	638,945	638,945	638,945	638,945
2065	-	928,104	435,973	946,667	1,067,320	1,009,314	638,945	638,945	638,945	638,945

Fiscal Year	BART Forecast	Extrapolated	No Project - Constrained	Lower Bound - Unconstrained	Upper Bound - Unconstrained	Most Likely - Unconstrained	Constrained Maximum	Lower Bound - Constrained	Upper Bound - Constrained	Most Likely - Constrained
2066	-	943,089	435,973	961,951	1,084,552	1,025,609	638,945	638,945	638,945	638,945
2067	-	958,315	435,973	977,482	1,102,063	1,042,168	638,945	638,945	638,945	638,945
2068	-	973,788	435,973	993,263	1,119,856	1,058,994	638,945	638,945	638,945	638,945
2069	-	989,510	435,973	1,009,300	1,137,936	1,076,092	638,945	638,945	638,945	638,945
2070	-	1,005,486	435,973	1,025,595	1,156,308	1,093,466	638,945	638,945	638,945	638,945
2071	-	1,021,719	435,973	1,042,154	1,174,977	1,111,120	638,945	638,945	638,945	638,945
2072	-	1,038,215	435,973	1,058,980	1,193,948	1,129,059	638,945	638,945	638,945	638,945
2073	-	1,054,978	435,973	1,076,077	1,213,224	1,147,288	638,945	638,945	638,945	638,945
2074	-	1,072,011	435,973	1,093,451	1,232,812	1,165,811	638,945	638,945	638,945	638,945
2075	-	1,089,318	435,973	1,111,105	1,252,716	1,184,634	638,945	638,945	638,945	638,945
2076	-	1,106,906	435,973	1,129,044	1,272,942	1,203,760	638,945	638,945	638,945	638,945

Source: WSP

Appendix VI: BART Outreach to Disadvantaged Communities

Appendix VI. Outreach to Disadvantaged and Low Income Communities

Fleet of the Future Final Train Car Model

Project Overview
BART is in the process of replacing its original fleet of rail cars. The new Fleet of the Future will replace all 669 cars in the current fleet and add additional cars to alleviate crowding during peak periods and make more seats available to riders. BART's has already ordered 775 train cars and has plans to grow the fleet to 1,081 cars.

Public Participation Activities
In April and May 2014, BART presented a full-scale model of its proposed new train car design to the public through a series of ten events throughout the Bay Area. BART invited the public to tour the new car and provide feedback by completing a survey form.

BART conducted outreach for the public events using the following methods:

- Creation of an outreach flyer with instructions in four languages on how to request translation services
- BART website announcement and news story
- Multiple BART news alerts to project subscriber list
- Advertisements in local print media including Oakland Post, El Mensajero (Spanish), El Mundo (Spanish), Sing Tao (Chinese), World Journal (Chinese), Korean Times (Korean), Kyocharo Korean News (Korean), and Viet Nam, The Daily News (Vietnamese)
- Announcement on the BART Destination Sign System (DSS) at all BART stations
- Noticing at BART stations through event banners and signage
- BART social media posts
- Email distribution to over 400 CBOs and elected officials in Alameda, Contra Costa, and San Francisco County
- Email and presentations to BART Advisory Committees and Task Force Members
- Two videos posted to BART TV (Youtube)
- Outreach "street teams" located at the station during event hours

Event Locations	Date and Time	Surveys
Justin Herman Plaza (near Embarcadero Station)	Wednesday, April 16, 2014 11:30 am – 7:00 pm	1,254
West Oakland BART Station	Friday, April 18, 2014 2:00 – 7:00 pm	632
Fremont BART Station	Monday, April 21, 2014 2:00 – 7:00 pm	933
Pittsburg/Bay Point BART Station	Wednesday, April 23, 2014 2:00 – 7:00 pm	702
San Francisco Civic Center Plaza (Near Civic Center Station)	Friday, April 25, 2014 11:00 am – 7:00 pm	927

Event Locations	Date and Time	Surveys
North Berkeley BART Station	Tuesday, April 29, 2014 2:00 – 7:00 pm	914
Milpitas/San Jose – Great Mall Main Transit Center	Friday, May 2, 2014 2:00 – 7:00 pm	209
Dublin/Pleasanton BART Station	Monday, May 5, 2014 2:00 – 7:00 pm	591
Fruitvale BART Station	Wednesday, May 7, 2014 2:00 – 7:00 pm	709
Concord BART Station	Friday, May 9 2014 2:00 – 7:00 pm	795
	Total Surveys	7,666

Translated copies of the informational displays and surveys were available in Chinese, Korean, Spanish, and Vietnamese. Spanish translation services were provided for the event at Fruitvale Station.

In all, approximately 17,500 people attended the events and a total of 7,666 surveys were collected. Over 5,000 people also wrote comments on their survey forms. Of the total of 7,666 survey forms completed, 111 were completed in Spanish and 9 were completed in Chinese. No surveys were completed in Vietnamese or Korean.

BART Vision – Future BART

Project Overview

BART Vision - Future BART is an effort to begin mapping out the future of the BART system. BART is now 44 years old, and requires significant system reinvestment to continue to provide high quality service. In addition, the region will change and grow significantly over the next 40 years. This planning effort explored the tradeoffs involved in considering how BART can meet these dual challenges. The BART Vision Plan is about narrowing down the options of projects BART should focus on by determining which ones are most important to the public and fit best into our goals of serving the Bay Area for years to come.

Public Participation Activities

The public was invited to a series of in station events to play an interactive planning and budgetary game on an Ipad tablet. The game outlined three improvement categories participants could select from: Fix and Modernize BART; More Train and Station Capacity; and New Lines & Extensions. Within the three categories participants could choose and prioritize specific projects and the revenue sources to help pay for them. Revenue sources included a bond measure, regional gas tax, higher bridge tolls, and others. The "player" was given a budget and needed to stick to it or select additional funding sources if they wanted to select more projects. The purpose of the exercise was to show participants, in real time, the potential benefits and impacts of different spending decisions and the annual household cost of your selected priorities. Large poster boards were also displayed at each in station event to educate the public on the BART Vision planning process and three improvement categories. Spanish Interpreters also were provided at the Pittsburg/Bay Point Station and Chinese interpreters were provided at Balboa Park and Montgomery Street Stations.

For members of the public not able to attend a station event, the game was available online at www.futurebart.org. During in-station events, BART staff also passed out postcard sized versions of the flyer with the website for the online game.

A total of ten in-station events were held on the following dates between 4 – 7pm.

- Fremont Station - Tuesday, Oct 7, 2014
- Balboa Park Station - Wednesday, Oct 8, 2014
- El Cerrito del Norte Station - Thursday, Oct 9, 2014
- Pittsburg/Bay Point Station – Tuesday, Oct 14, 2014
- Dublin/Pleasanton Station – Wednesday, Oct 15, 2014
- Walnut Creek Station – Thursday, Oct 16, 2014
- 19th Street /Oakland Station – Tuesday, Oct 21, 2014
- Downtown Berkeley Station – Wednesday, Oct 22, 2014
- Richmond Station – Tuesday Oct 28, 2014
- Montgomery Street Station – Thursday, Oct 30, 2014

BART conducted public outreach for the in-station events using the following methods:

- Creation of a meeting notice translated into Chinese and Spanish with translation taglines in Tagalog, Vietnamese, and Korean
- Email notification with flyer to over 480 CBOs and Elected Official database
- BART website announcement and news story
- Email and presentation to BART Advisory Committees and Task Force Members

- Announcement on the BART Destination Sign System (DSS)
- Social media announcements
- In-station signage
- Postcard size flyer with survey link

Over 2,551 survey responses to the game were received by project staff. The feedback received will be used to develop the BART Vision Plan which will help guide the BART Board of Directors and staff when making decisions about the future of BART.

Embarcadero & Montgomery Capacity Implementation Plan and Modernization Study

Project Overview

BART is working to improve the capacity at two of our busiest stations – Embarcadero and Montgomery. While ridership has been growing for several years, BART has performed several studies to develop project concepts to handle the increasing demand. In addition, BART is identifying modernization needs to improve station functionality, safety, access, appearance, and the overall customer experience. Understanding the concerns of stakeholders and BART riders has been central to the planning underway. BART is now developing an implementation and phasing plan to move forward with the most effective near-term improvements as well as potential future projects to accommodate the increasing number of riders and modernize the stations. These efforts are vital to support the continuing growth of the region and its transit network.

Public Participation Activities

BART held a series of in-station open houses to solicit public input. The first open house events were held on October 28, 2014, at Embarcadero Station during the AM and PM commute hours and October 30, 2014, at Montgomery Station also during the AM and PM commute hours. The purpose of the outreach was to inform BART riders and the public about BART's planning process and efforts to implement capacity and modernization efforts at the stations; build awareness and understanding of challenges and potential solutions; identify community issues beyond those that have already been raised or anticipated; and survey riders and the public on preferences for modernization/capacity improvements.

During the four events, BART staff handed out more than 15,000 postcards with project information in three languages (English, Spanish, Chinese) and taglines in Tagalog, Korean and Vietnamese. The postcard included a link to the project webpage and a request to fill out a survey for each station. Hardcopy surveys and drop boxes for surveys were available at each station for at least 24 hours before and after the events. There were large display boards that included information about the overall project and concepts for increasing capacity and modernization improvements at these stations. The display boards and surveys were also available in Spanish and Chinese.

For Embarcadero Station 2,858 survey responses were received and for Montgomery Station 2,042, totaling 4,900 survey responses. In total, eight Chinese language surveys were collected and seven Spanish language surveys.

A second round of in-station open houses at Embarcadero and Montgomery BART stations was held in October 2015. These events focused on the recommended alternative concepts and modernization improvement options. The open houses were held at the Embarcadero Station on October 13, 2015, and at the Montgomery Station on October 14, 2015. Both were held during the morning commute from 7-10 AM in the free areas of the stations. The public had an opportunity to view display boards, laptops depicting pedestrian flow modeling and 3-D illustrations of the recommended concepts, recommended alternative concepts, and modernization options for each station. The display information was also available in Spanish and Chinese. Comments were collected in conversations (on clip boards) and on an unmonitored, large-format easel note pads that allowed anyone to comment on their own.

BART conducted public outreach for the in-station events using the following methods:

- Creation of outreach flyer with instructions in four languages (Chinese, Korean, Spanish and Vietnamese) on how to request translation services
- Email flyer and survey to key stakeholder mailing list including neighborhood organizations, business groups, community based organizations, elected officials, schools, media and members of the Technical Advisory Committee
- Announcements through BART's Destination Sign System
- BART news story and email alert
- Social Media announcements
- Email and presentation to BART Advisory Committees and Task Force Members
- In-station signage (large posters, digital signs, and sandwich boards)
- Postcard size flyer with survey link

Better BART

Project Overview

The Better BART outreach program is an initiative to educate the Bay Area public about BART's 45 year old system and the critical infrastructure investments that it needs. Despite BART's aging infrastructure, the Bay Area economy is relying on BART more than ever as BART experiences record ridership and increased capacity. BART estimates that it requires a 9 billion dollar investment to improve three key components of its infrastructure; 1. The purchase of new rail cars, 2. Modernization of the operation control center and, 3. Expansion of the Hayward Maintenance Facility. BART has identified federal, state and local funding to pay for half of the investments that are needed to upgrade the system.

The goal of the program is to increase public awareness and build a broad coalition of supporters ready to champion public re-investment in the BART system. The coalition included elected officials, businesses, labor, environmental organizations, bicycle advocates, senior and disability advocacy groups, first responders and community based organizations.

Public Participation Activities

In November 2016, Bay Area voters passed Measure RR, a $3.5 billion infrastructure bond to reinvest in BART. As of November 2017, BART has given over 400 presentations to diverse stakeholder groups in the Bay Area to educate the public about its infrastructure needs and to update the public about the bond construction that is taking place. BART has distributed survey questionnaires to all presentation attendees and received over 1500 responses to date.

MTC Plan Bay Area 2040

Project Overview

MTC's Plan Bay Area 2040 is long-range transportation and land use plan mandated by SB375. The region adopted its first regional transportation plan in 2013, which focused on the reduction of greenhouse gas emissions through the promotion of more compact, mixed use residential and commercial development near public transportation. Plan Bay Area 2040 builds upon the goals established in Plan Bay Area and considers how growth will occur throughout the region over the next twenty-four years. BART is as a key stakeholder in Plan Bay Area 2040 participated throughout the multiyear outreach activities led by MTC.

Public Participation Activities

Public participation activities included extensive outreach with local government officials, community based organizations, agency stakeholders, the region's 101 cities and nine counties also participated in the development of the Plan.

Engagement activities include workshops in each county and public hearings on the draft prior to adoption of a final plan. Thousands of people have participated in public open houses and other public meetings, telephone and internet surveys, and more.

Highlights from the effort include:

- 27 open houses in the nine Bay Area counties that drew nearly 1,500 participants over the three rounds of open houses (three open houses per county)
- One statistically valid telephone poll in spring of 2016 that reached out to more than 2,000 Bay Area residents from all nine counties and conducted in English, Spanish and Chinese
- Six public hearings to gather input on the plan's environmental impact report (EIR)
- A regional housing summit attended by some 300 Bay Area public officials, community leaders and interested residents to consider ideas and best practices for alleviating the region's housing affordability crisis
- Ongoing meetings with local elected officials, local planning directors and officials from congestion management and transit agencies as well as staff from environmental protection agencies, including 10 presentations to elected officials on the Draft Plan
- Partnerships with community-based organizations (CBOs) in low-income communities and communities of color that featured presentations by CBO leaders directly to MTC and ABAG decision makers, 168 completed online surveys ranking planning scenarios and five focus groups with 70 residents to discuss the Draft Plan
- An active web presence, including nearly 255,000 page views by 63,000 unique visitors to the PlanBayArea.org and 2040.planbayarea.org websites between July 2014 and July 2017 (60 percent of visitors were new visitors)
- An active social media presence with a total of 28 paid campaigns on Facebook and Twitter
- Online "Build a Better Bay Area" survey taken by some 920 participants helped illustrate policy and fiscal tradeoffs associated with three different future growth and transportation scenarios
- Nine videos produced, posted online explain the planning process and challenge facing the region
- The Plan was discussed at a total of 195 public meetings during its development.

MTC documented its public participation below are highlights from the transportation related feedback collected throughout public participation activities:

- For transportation, people would like to see more transit alternatives (especially BART), as well as extended hours of transit service. They prioritized efforts to ensure reliability and connectivity of the transportation network as well as the infrastructure needed to support bicycling and walking.
- There was strong support for increased BART extensions and increased BART service

MTC Core Capacity Transit Study

Project Overview

MTC's Core Capacity Transit Study is a collaborative effort to improve public transportation to and from the San Francisco core. Five transit operators: BART, Muni, AC Transit, Caltrain, and the Water Emergency Transportation Authority, in coordination with the San Francisco County Transportation Authority (SFCTA) and the Metropolitan Transportation Commission (MTC) have committed to identifying investments and improvements to increase transit capacity to the San Francisco Core. BART's investments include, expansion of its railcar fleet to increase train car length and increased headways, additional storage and maintenance capacity, a new train control system and upgrades to BART's traction power system.

Public Participation Activities

In February 2017, the MTC's Core Capacity Transit Study Project Management Team hosted two public workshops to discuss the study's evaluation criteria and project packages with project stakeholders. The workshops were held at the SPUR offices in San Francisco and Oakland, and between 30 and 50 people attended each event. The purpose of the public meetings was to provide participants an overview of the study background and obtain feedback on short, medium and long-term transit enhancement concepts. Breakout groups allowed participants to share their thoughts on, concerns with, and suggestions for the various evaluation criteria and project packages.

Hayward Maintenance Complex Phase II Noise Study

Project Overview

The HMC project is identified BART's Strategic Maintenance Plan, adopted in 2008, as a priority measure to achieve its goal to expand BART's maintenance and operations capacity in order to accommodate future riders from BART expansions, including to San Jose, East Contra Costa County, Oakland Airport Connector and Livermore. HMC is critical to improving BART's long-term car reliability and passenger service on the BART system.

Public Participation Activities

On October 21, 2010, BART hosted a public meeting to discuss and solicit input from community members regarding the proposed Hayward Maintenance Complex (HMC) project. Community meeting participants had the opportunity to ask questions and provide feedback. During the meeting, participants were asked to sign in and were provided a project brief and other BART informational materials. BART staff briefly reviewed the agenda and meeting purpose, followed by a presentation about the HMC project, which described the project purpose, need, elements, and the environmental analysis and review timeline. Following the presentation meeting attendees participated in discussion and had the opportunity to ask questions and make multiple comments. A graphic recorder took notes and recorded comments and questions on large scale wallgraphic paper.

BART conducted additional outreach for the meetings using the following methods:

- Mailings to residents (4,600) and businesses (600) within one mile of the HMC site
- BART website announcement
- Bay Area Media, both print and online
- "In person" outreach in nearby communities
- Creation of trilingual flyer and mailer in English, Spanish and Tagalog
- Distribution of postcards, flyers and community bulletins through the following local community-based and municipal organizations:

Appendix VII: BART Public Participation Plan

July 8, 2011

Public Participation Plan

San Francisco **Bay Area Rapid Transit**

63452v1

Table of Contents

EXECUTIVE SUMMARY

Introduction

The Public Participation Plan (PPP) is a guide for San Francisco Bay Area Rapid Transit District's (BART) ongoing public participation endeavors. Its purpose is to ensure that BART utilizes effective means of providing information and receiving public input on transportation decisions from low income, minority and limited English proficient (LEP) populations, as required by Title VI of the Civil Rights Act of 1964 and its implementing regulations.

Under federal regulations, transit operators must take reasonable steps to ensure that Limited English Proficient (LEP) persons have meaningful access to their programs and activities. This means that public participation opportunities, normally provided in English, should be accessible to persons who have a limited ability to speak, read, write, or understand English.

In addition to language access measures, other major components of the PPP include: public participation design factors; a range of public participation methods to provide information, to invite participation and/or to seek input; examples to demonstrate how population-appropriate outreach methods can be and were identified and utilized; and performance measures and objectives to ensure accountability and a means for improving over time.

Summary of Findings

In general, PPP development participants requested that BART offer a variety of community meeting formats, from large group discussions to one-on-one interviews. They also are interested in utilizing methods other than community meetings, such as smaller focus groups, surveys, or a telephone line, to provide their input to BART. They further requested that meeting formats be tailored to specific public participation goals. Many participants stated that convenient meeting times and locations, plus amenities such as child care and refreshments during meetings, were helpful in encouraging diverse meeting attendance and participation.

The PPP development process revealed population-specific findings for low income, minority and LEP communities, demonstrating that effective public participation strategies make use of a variety of methods in order to reach the greatest possible diversity of participants. These findings are discussed in detail in Section III, "Public Participation Strategy Design Factors," and Section IV, "Public Participation Methods."

Comments and survey data from the PPP development process are used throughout the document in support of both general and population-specific

findings. Note that these comments and data are based specifically on PPP community meeting and survey participant responses, and are in no way meant to generalize views based on an individual's membership in a protected group. The surveys conducted during the PPP development process were not intended to be statistically valid, but were included as additional support to public input which was primarily received through verbal and written comments.

Summary of Process

In order to engage low income, minority and LEP populations in the development of the PPP, BART conducted two rounds of multi-lingual community meetings (29 total) throughout the BART service area in spring 2010. BART coordinated with community-based organizations (CBOs), offered translation services in 10 languages, and collected more than 1,350 surveys and 750 written comments through evaluation forms and wallgraphic notes recorded during meetings.

BART supplemented the extensive public participation process by conducting informational meetings with CBO stakeholders serving LEP populations in the BART service area. In May 2010, outreach that included telephone interviews and focus group meetings was conducted throughout the BART service area. In the fall of 2010, 19 LEP focus group meetings were conducted and attended by well over 400 LEP persons. The CBOs represented the following language groups: Chinese, Korean, Russian, Spanish, Tagalog and Vietnamese. Finally, an internal BART stakeholders' meeting was convened in May 2011 to review and reflect on internal stakeholders' experience with the PPP.

A database containing contact information for more than 1,000 individuals and more than 400 CBOs was created from outreach, surveys and sign-in sheets at the community meetings held throughout 2010, and will continue to be updated.

The input from these meetings validated the most successful practices that are described in this PPP. It also suggested revisions and enhancements based on lessons learned from the public participation methods conducted over the past year.

I. INTRODUCTION

A. San Francisco Bay Area Rapid Transit District (BART)

BART is a rapid transit system that travels through 26 cities and a four-county service area, including Alameda, Contra Costa, San Francisco and San Mateo counties. BART has 104 miles of track, 44 stations and an average weekday ridership of 360,000 passengers. During peak transbay commute hours, more than 50,000 people ride BART. BART provides discounted fares for seniors, persons with disabilities, students and qualified educational groups. Children ages 4 and under ride free.

BART opened in September 1972 and is governed by a directly-elected nine member Board of Directors serving four year terms.

BART provides a variety of written and oral language assistance services. These are identified in Appendix E: Frequency of Contact with LEP Individuals.

B. Purpose of the Public Participation Plan (PPP)

BART developed the PPP to guide public involvement efforts and enhance access to BART's transportation decision-making process by low income, minority and limited English proficient (LEP) populations. Based on both input collected from these populations regarding effective public involvement and on BART's experiences, the PPP describes the overall goals, guiding principles and appropriate outreach methods that BART could use to reach out to low income, minority and LEP populations.

Pursuant to Federal Transit Administration (FTA) Title VI regulatory guidance, federal funding recipients and subrecipients should seek out and consider the viewpoints of minority, low income and LEP populations "in the course of conducting public outreach and involvement activities." (FTA Circular 4702.1A) This guidance also requires that an agency offer "early and continuous opportunities for the public to be involved in the identification of social, economic and environmental impacts of proposed transportation decisions at BART." To meet these requirements, BART developed the PPP, a document intended as a guide for how BART will deepen and sustain its efforts to engage diverse community members throughout its service area. The PPP also includes example public participation strategies, designed using the PPP goals, principles and methods.

The PPP aims to offer early, continuous and meaningful opportunities for the public to be involved in the identification of social, economic and environmental impacts of proposed transportation decisions at BART. The PPP is intended as a guide for how BART will deepen and sustain its efforts to engage diverse community members throughout its service area. The PPP also includes example public participation strategies, designed using the PPP goals, principles and methods. These examples have proven successful for BART in doing outreach to these populations.

BART may continue to modify its public participation methods over time based on feedback from the low income, minority and LEP populations, including customer and community-based organizations, about the effectiveness and inclusiveness of the PPP. The PPP is intended to be a living document and may be updated periodically to reflect community preferences, changing demographics and transit services, as well as respond to new communication and outreach methods.

C. Process to Develop the PPP

To develop the PPP, BART hosted 22 community meetings throughout the BART service area between March 31, 2010 and April 21, 2010. The meetings were held to determine how BART could best provide information and receive public input on transportation issues from low income, minority and LEP populations.

Based on the feedback received, BART developed a draft PPP. BART mailed the draft PPP to all participants who provided their addresses on the sign-in sheets at the community meetings. The draft PPP was sent to participants in their preferred language, as indicated on the sign-in sheets, and in Braille to participants with visual impairments. BART also distributed the draft PPP to community-based organizations (CBOs) and posted it on the BART website. A printed comment form was included with the draft PPP.

BART conducted a second round of 7 meetings to discuss the draft PPP during the first three weeks of May 2010. The PPP incorporated the feedback and suggestions received during the community meetings, comments received through the website, written comment forms, letters and verbal comments expressed during the BART Board of Directors meeting held on May 13, 2010.

BART supplemented the extensive public participation process by conducting informational meetings with CBO stakeholders serving LEP populations in the BART service area. In May 2010, outreach was conducted that included telephone interviews and focus group meetings conducted throughout the BART service region. In the fall of 2010, 19 LEP focus group meetings were conducted and attended by CBOs serving LEP populations, as well as over 400 LEP persons. The CBOs represented the following language groups: Chinese, Korean, Russian, Spanish, Tagalog and Vietnamese. These six languages were identified as the most prevalent languages in the BART service area. They provided feedback on how to improve language assistance measures at BART, including use of BART fare equipment, safety and security, awareness of current language assistance measures, and improvements to BART's language assistance measures. In April and May 2011, BART conducted outreach to LEP populations to review BART's Language Assistance Plan (LAP) in preparation for inclusion in the PPP. Through each of these efforts, more than 400 people provided feedback on how to improve understanding and increase use of the BART system by persons with limited English proficiency.

Public Participation Survey

In addition, BART distributed a public participation survey at the PPP community meetings and to CBOs in the following languages: Spanish, Chinese, Tagalog, Russian, Korean and Vietnamese, and, in response to community requests for additional languages, in Laotian, Cambodian and Portuguese. The survey was also provided in Braille and posted on the BART website. BART received more than 1,350 responses to the survey. The survey queried participants regarding their preferences for public participation processes.

BART hired a consulting firm, MIG, Inc., a planning, design and communications firm in Berkeley, California, to assist with the development of the PPP. During development of the PPP, MIG staff served as neutral, third-party facilitators and recorded comments expressed at the community meetings. MIG transcribed and compiled the comments submitted in writing, tallied the meeting evaluation responses and transcribed participant contact information from the meeting sign-in sheets. MIG also assisted BART with the development of the PPP survey.

MIG provided an objective review of the findings from the meetings, comment cards and surveys; these findings and analysis were used to develop this PPP. MIG has compiled a PPP Development Summary Report on the Plan development outreach process, which includes the following appendices: a database of all public comments submitted; a tally and analysis of meeting evaluation responses; and a tally and analysis of survey responses.

Responses to surveys were tallied and analyzed by calculating the percentage of respondents who gave each possible multiple-choice answer. This analysis was performed both on overall data and on data from low income, minority and LEP respondents in order to determine where the preferences of those populations differed from or matched the overall results.

The surveys also included space for respondents to identify alternatives to the options given, as well as make general comments on the public participation process. Comments submitted in writing as well as graphic recordings of comments made during the meetings were compiled into a database. The comments were tracked by meeting location, source (whether from an online or print survey, comment card or meeting wallgraphic) and preferred language. Comments were categorized by both major themes and sub-themes developed with reference to meeting agendas and questions asked on the surveys. An example survey from the PPP development process is included as Appendix L.

Target Audience Identification

BART determined geographical areas where meetings would be held through a mapping analysis of Bay Area communities based on income and race. Using the results of the mapping, BART identified and contacted CBOs located in BART's four service

areas to determine their interest in assisting with outreach to these residents. The CBOs that BART contacted serve a broad range of community interests.

Community-Based Organizations

CBOs played an important role in the development of the PPP. BART worked with a variety of CBOs, including: ethnic cultural centers; churches and faith-based organizations; geographic-specific such as tenant associations; neighborhood and community groups; civic groups; business organizations; educational facilities including schools providing English as a Second Language programs; service providers for children, youth, families and persons with disabilities; recreation; environmental; political; youth- and senior-oriented organizations; and many others. Many CBOs were receptive to BART's request for assistance and BART staff worked closely with the CBOs to schedule and conduct outreach for the PPP meetings. The CBOs assisted BART by selecting meeting venues, recommending languages for translation and interpretive services, providing refreshments and childcare assistance, and helping to publicize the meeting and recruit participants. BART arranged and supplied staff support, interpreters, meeting materials, supplies and equipment for all of the meetings. The contacts and relationships established through the meeting planning process helped to renew and expand some of the partnerships BART had in place and provide a good foundation to implement the PPP over time. A comprehensive list of these CBOs can be found in Appendix B: BART Community-Based Organization Partners.

*Notification Methods for PPP Community Meetings**

- CBO Newsletters
- CBO Mailing Lists
- Direct Mail
- Ethnic Media
- Paid Advertisement
- Flyer Distribution to CBOs
- Flyer Distribution at BART Stations
- Flyer Distribution on BART Car Seats
- Posting on the BART website (www.bart.gov)
- Offices of city and county elected officials

Translation Services

Translated materials and interpretive services were available for every PPP community meeting in the nine languages already identified above under "Public Participation Survey," plus Braille. Written comments received in these languages were translated after the meetings and were included in the comments database (included as an appendix to the PPP Development Summary Report).

The PPP reflects participant preferences for how BART should invite, listen to and respond to all residents when making decisions that will affect them. The PPP identifies a menu of public participation methods to consult in the future. The plan and menu of methods was developed based on a review and analysis of comments expressed orally during the 29 community meetings, more than 750 written comments submitted on comment cards or evaluation forms and expressed during the meetings, and the results of more than 1,350 surveys.

The PPP also draws on the LAP. As part of the LAP development, the importance of BART services to persons with limited English proficiency was evaluated. LAP outreach activity findings highlight opportunities, challenges and access needs for public participation from and public outreach to LEP populations. One of the common themes that emerged from interviews conducted with CBOs and focus groups was that LEP community members were often unaware of BART's public participation due to the lack of translated information.

D. Low Income, Minority and LEP Population in BART Service Areas

BART periodically identifies the number and proportion of low income, minority and LEP population distribution in the four-county region that BART serves. BART uses the following thresholds to identify census tracts in the service area that are predominantly minority, low income and LEP:

- Low income: Using 2000 U.S. Census data, low income is defined as less than 200 percent of the federal poverty level.[1] The 200 percent threshold was used to account for the high cost of living in the Bay Area compared to the rest of the country. The 200 percent threshold is also consistent with the assumptions employed by the Metropolitan Transportation Commission in its February 2009 Equity Analysis Report. The percentage of low income population within BART's four county service area was determined to be 21.6 percent.
- Minority: Using the year 2000 Census data, 52.7 percent of the total population living within the BART service area are minority. This includes persons who self-identified as Black or African American, Asian or Pacific Islander, Native American or Alaska Native, Hispanic or Latino, and those persons who identified themselves as some other race or two or more races.
- Limited English Proficient (LEP): are persons for whom English is not their primary language and who have a limited ability to speak, understand, read, or write English. This definition includes people who reported to the U.S. Census that they do not speak English well or do not speak English at all. BART's analysis of 2000 U.S. Census data showed that LEP populations represent 18.6 percent of the total BART service area. Of the LEP populations, the largest

[1] As a reference, for a single person household, 200% of the federal poverty level in 2008 was $21,982. For a two-adult, two-child household, the 200% threshold was $43,668. (Note that the data mapped are based on 2000 Census data as these are the only such data available at the tract level.)

groups are Spanish-speaking (43%), Chinese-speaking (27%), Vietnamese-speaking (4%), Russian-speaking (2%), and Korean-speaking (2%).

The methodology for low income and minority population identification is included in Appendix J: Minority and Low Income BART Service Area Census Tracts.

Appendix H: Service Area Maps illustrates the location as of 2010 of the following populations in the BART service area:

- Minority populations predominantly;
- Low income populations predominantly;
- LEP populations who do not speak English or do not speak English at all;
- Spanish-speaking LEP populations;
- Chinese-speaking LEP populations;
- Vietnamese-speaking LEP populations; and
- Korean-speaking LEP populations.

Low Income Population by Home-Origin BART Station

The number and proportion of low income populations by home-origin BART station were assessed for BART's 2008 Station Profile Study. The table below illustrates the home-origin BART stations with the largest percentage of low income customers.* Data is based on weekday usage.

Home-Origin BART Station	% of Low Income Customers*
Powell St	45%
Balboa Park	38%
Richmond	37%
Coliseum / Oakland Airport	37%
Downtown Berkeley	37%
Civic Center	36%
12th St / Oakland City Center	34%
19th St / Oakland	31%
Lake Merritt	31%
Ashby	30%
MacArthur	29%
Fruitvale	28%
Hayward	27%
El Cerrito del Norte	26%
Pittsburg/ Bay Point	26%
Bay Fair	25%

Home-Origin BART Station	% of Low Income Customers*
San Leandro	24%
16th St Mission	24%
24th St Mission	23%
Colma	23%
Daly City	22%
South Hayward	22%

** Note: In this table, "low income" includes those with annual household incomes under $25,000 (regardless of household size) and those with annual household incomes of $25,000 - $49,999 with household sizes of two or more people. In certain cases, this may be a broader definition than the threshold described in Section D (200% of the federal poverty level) where low income is defined as $44,700 for a household size of 4.*

Minority Population by Home-Origin BART Station

The number and proportion of minority populations by home-origin BART station were assessed for BART's 2008 Station Area Profile Study. The table below identifies the 17 home-origin BART stations with the largest percentage of minority customers.* Data is based on weekday usage.

Home-Origin BART Station	% of Minority Customers*
Coliseum / Oakland Airport	82%
South Hayward	79%
Union City	78%
Balboa Park	77%
Richmond	74%
Pittsburg/Bay Point	73%
South San Francisco	73%
Hayward	71%
Fremont	70%
Colma	68%
El Cerrito del Norte	68%
Daly City	67%
Bay Fair	67%
12th Street/Oakland City Center	66%
San Leandro	65%
San Bruno	59%

Home-Origin BART Station	% of Minority Customers*
Lake Merritt	57%

** Note: BART's 2008 Station Area Profile identified 56 percent of the population in its service area as non-white based on U.S. Census Bureau 2006 to 2008 American Community Survey (ACS) 3-Year Sample data.*

Limited-English Proficient Population within BART Service Area

The number and proportion of persons with limited English-speaking proficiency and their language characteristics likely to be encountered within BART's four-county service area were assessed for the LAP. Both the U.S. Census and ACS data sources identify the top six languages spoken by LEP persons in the BART service area as the following: Spanish, Chinese (Cantonese and Mandarin), Vietnamese, Tagalog, Russian and Korean.

Primary Languages Spoken in the BART Service Area, Census 2000		
Language	Population Speaking Non-English Languages	Percent of Total Population
Spanish	517,983	14.24
Chinese	282,398	7.76
Tagalog	141,341	3.88
Vietnamese	37,785	1.04
Russian	28,993	0.80
All Other Languages	332,738	9.14
Total Speaking Non-English Languages	**1,341,238**	**36.86**

Source: U.S. Census Bureau, Summary File 3 (SF 3), 2000, Table PCT.10

F. Definitions

To ensure consistent use of terminology in the PPP, the following definitions are provided.

- *Community Partners:* Any organization or group that desires to work with BART to help facilitate participation by their members in a BART-sponsored participation strategy method. Community partners are also stakeholders and play a critical role in helping to reach target audiences.

- *Language Assistance Plan (LAP):* A tailored plan that describes BART's self assessment which identifies appropriate language assistance measures needed to improve access to BART services and benefits from limited English proficient persons.

- *Limited English Proficient (LEP) population:* Those persons who reported to the U.S. Census Bureau that they do not speak English well or who do not speak English at all.

- *Outreach:* An effort by individuals in an organization or group to share its ideas or practices, to educate or inform, and to engage and seek input from other organizations, groups, specific audiences or the general public.

- *Outreach Methods:* Methods that identify and invite target audiences and stakeholders to participate in a public participation opportunity.

- *Public Information:* A one-way communication from BART to the public with the goal of providing clear and objective information about a policy, project, program or activity.

- *Public Input:* Participation methods that seek community feedback on a policy, project, program or activity. A response is required from the public.

- *Public Participation:* Any process that seeks to inform, collect input from or involve the public in decision-making processes. Public participation is an umbrella term that describes methods including: public information, education, outreach, input, involvement, collaboration and engagement, and communication from the public to BART.

- *Public Participation Plan (PPP):* A tailored plan that describes how BART may undertake public involvement, information, education, participation and/or outreach methods.

- *Public Participation Strategy:* A specific program of participation methods tailored to meet the participation needs and preferences of a specific geographic area or cultural group. The public participation strategy is informed by BART's overall PPP, as defined above, but is adapted for that geographic area, specific group and/or issue at hand.

- *Public Relations:* The dissemination of information to the media and the public with an emphasis on the promotion of a particular policy, program, project or activity.

- *Target Audience and Participants:* Low income, minority and Limited English Proficiency (LEP) populations.

- *Government and Community Relations (GCR):* BART's Government and Community Relations Department serves as a direct liaison to the community and local, state and federal elected officials and their staff representing the San Francisco Bay Area on all issues related to BART.

- *Office of Civil Rights (OCR):* BART's Office of Civil Rights oversees and monitors BART's Civil Rights compliance ensuring all BART policies, practices and procedures are free from discrimination, harassment and retaliation and to coordinate BART's Title VI compliance.

II. GOALS AND GUIDING PRINCIPLES

A. Goals

The PPP endeavors to offer meaningful opportunities for the public, including low income, minority and limited English proficient populations, to be involved in the identification of social, economic, and environmental impacts of proposed transportation decisions at BART.

Specific goals and outcomes include:

- Quality Input and Participation
  Comments received by BART are useful, relevant and constructive, contributing to better plans, projects, strategies and decisions.

- Consistent Commitment
  BART communicates regularly, develops trust with communities and builds community capacity to provide public input.

- Diversity
  Participants represent a range of socioeconomic, ethnic and cultural perspectives, with representative participants including residents from low income neighborhoods, ethnic communities and residents with limited English proficiency.

- Accessibility
  Every effort is made to ensure that opportunities to participate are physically, geographically, temporally, linguistically and culturally accessible.

- Relevance
  Issues are framed in such a way that the significance and potential effect is understood by participants.

- Participant Satisfaction
  People who take the time to participate feel it is worth the effort to join the discussion and provide feedback.

- Clarity in Potential for Influence
  The process clearly identifies and communicates where and how participants can have influence and direct impact on decision-making.

- Partnerships
  BART develops and maintains partnerships with communities through the methods described in the PPP.

B. Guiding Principles

Effective public participation should be based on the following principles:

- Flexible
  The engagement process should accommodate participation in a variety of ways and be adjusted as needed.

- Inclusive
  BART should proactively reach out and engage low income, minority and LEP populations from the BART service area so these groups will have an opportunity to participate.

- Respectful
  All feedback received should be given careful and respectful consideration.

- Tailored
  BART's public participation methods should be tailored to match local and cultural preferences as much as possible.

- Proactive and Timely
  Participation methods should allow for early involvement and be ongoing and proactive so participants can influence BART's decisions.

- Clear, Focused and Understandable
  Participation methods should have a clear purpose and use for the input, and should be described in language that is easy to understand.

- Trustworthy
  Information provided should be accurate and trustworthy.

- Responsive
  BART should strive to respond and incorporate appropriate public comments into transportation decisions.

- Transparent in Impact
  BART should communicate the results of the public's input in terms of the impact on decisions at a broad summary level, providing the major themes, the decisions reached and rationale for the decisions.

- Authentic and Meaningful
  BART should support public participation as a dynamic and meaningful activity that requires teamwork and commitment at all levels of the organization.

III. PUBLIC PARTICIPATION STRATEGY DESIGN FACTORS

A. Introduction

The following factors will guide BART in designing an appropriate public participation strategy and determining which methods should be employed in relation to transportation decisions which include major service changes, fare changes or construction projects. Strategies should be scaled in intensity, duration, number and frequency of methods used, with consideration of the following:

- Scale of plan or project (region-wide, county level, neighborhood level)
- Level of potential impact
- Cost of potential decision for BART, taxpayers and customers

The PPP includes methods that are tailored to achieve participation from specific geographic areas or communities and are culturally sensitive and inclusive of low income, minority and LEP populations. FTA guidelines provide BART "wide latitude to determine how, when and how often specific public involvement measures should take place, and what specific measures are most appropriate. Recipients [of federal funds] should make these determinations based on the composition of the population affected by the recipient's action, the type of public involvement process planned by the recipient, and the resources available to the agency."

Project-specific public participation strategy development will take the following into consideration: target populations and needs, partnerships with CBOs, and translation and interpretive services.

B. Target Populations and Needs

To reach low income, minority and LEP populations within BART's service area, a geographically focused public participation strategy will be needed to achieve the desired participation outcomes. BART staff will work with community partners and stakeholders to identify the most effective methods to support participation within a particular area or cultural group. For example, during the PPP development process, participants suggested specific meeting locations, meeting times, community-based organizations and media outlets that work best in their particular area. One community member illustrated the importance of tailoring each public participation strategy specifically to the project and community, asserting "in reaching out to minority and limited English language populations, you have to meet them where they are…to gather and communicate in the way that these various communities are accustomed to doing so. This may mean by unconventional methods."

Public participation outreach methods and strategies will likely vary depending on the nature and location of the project. For example, participants in PPP development

activities suggested a number of public participation methods other than traditional community meetings, such as: walking tours of specific stations conducted by BART Directors or staff; development of a "roadshow" with representatives staffing tables at community events such as fairs and festivals and locations such as malls, local supermarkets and BART parking lots; making suggestion boxes or comment cards, surveys on kiosks, or even a BART representative available at stations in order to gather feedback; surveying riders on BART regarding their needs; and sending representatives to city council and other regularly-scheduled community governmental meetings on a regular basis.

C. Partnerships with Community-Based Organizations (CBOs)

Based on past experience, BART finds that strong partnerships result in more participation, better meeting locations and better meetings overall. The CBOs provide a bridge between BART and the community, which helps to build and deepen trust. For example, the Lao Family Development Center in central East Oakland hosted a PPP meeting with BART and their locally-elected representative from the BART Board. The Center's outreach methods helped attract over 200 center members to participate in a community meeting.

CBOs can be helpful in clarifying the best outreach strategies for their constituent community. For example, Russian American Community Services noted that their Russian community members tend to have internet access and prefer to receive information online.

CBOs that serve persons from multi-lingual/multi-cultural groups have been helpful in hosting meetings that ensure participation by low income, minority and LEP populations. Methods at these locations can be both targeted and open to the public. The Native American Intertribal Friendship House located in Oakland is an example of one such location.

BART will continue to communicate with partner CBOs and take advantage of CBOs' ability to support BART public participation methods. However, care should be taken to consider the most strategic and targeted use of CBOs' resources so as to avoid placing an undue burden on the same organizations.

D. Translation and Interpretive Services

BART staff will work with CBOs to identify the specific language services that community members may expect to be provided. When BART is hosting public meetings in a particular geographic area with a known, significant LEP population, the following should be done:

1. Meeting notices should be produced and distributed according to the language translation threshold in the LAP[2], encouraging community members to participate. In addition, participants can request interpreter services 48 hours in advance of the meeting, if needed; and
2. BART will provide at least one qualified interpreter at these meetings who is fluent in the designated LEP language(s).

PPP Survey Results and Community Input

Community input in the form of comments received during the PPP process indicated that LEP PPP development participants support translation and interpretive services when possible to encourage their participation in BART-related public participation methods. PPP development survey results indicated the following population-specific findings regarding translation and interpretive services:

- More than 50% of PPP survey respondents were LEP. Among LEP survey respondents, some LEP language groups had stronger preferences for the presence of an interpreter at meetings than other language groups:
  - 63% of 193 Spanish-speaking PPP survey respondents
  - 69% of 67 Chinese-speaking PPP survey respondents
  - 77% of 320 Vietnamese-speaking PPP survey respondents
- 56% of 193 Spanish-speaking PPP survey respondents preferred having translated written material available at community meetings.

Targeted translation and interpretive services outlined in the LAP inform the PPP's targeted public participation methods. LAP translations and interpretation requirements and services are described at length in the LAP.

Vital Documents

BART will take reasonable steps to ensure that LEP persons receive the language assistance services necessary by translating "vital" written materials into the Language Translation Threshold in the LAP.

Vital documents are defined either as (1) any document that is critical for obtaining services and benefits, and/or (2) any document that is required by law. The "vital" nature of a document depends on the importance of the information or service involved, particularly the consequence to the LEP person if the information is neither accurate nor timely.

The designation of a document as "vital" may not mean that a word-for-word translation of that document will be required. In some cases, a vital document may be

[2] The language translation threshold consists of a minimum of four languages (Chinese, Spanish, Vietnamese and Korean), with the possibility of up to twenty-two additional languages, depending on the circumstances (the "Language Translation Threshold").

translated by providing a summary of the key information in the document. In other cases, notice of the availability of language assistance services may be sufficient.

IV. PUBLIC PARTICIPATION METHODS

A. Introduction

BART will be successful in reaching out to low income, minority and LEP populations by utilizing a variety of methods to provide information, invite participation and seek input. Regardless of the method, BART will select the most appropriate and feasible methods to support each public participation activity from the methods suggested by participants in the process of developing the PPP and determined by the LAP. Care should be taken to ensure that the selected methods are implemented in a manner that specifically targets the participation of low income, minority and LEP populations as well as the general public. It should also be noted that there is no "golden rule" as far as the preferences of any given population are concerned, so circumstances influencing participants affected by a particular project, as well as other factors such as geographic location, need to be considered.

B. Methods Suggested by Target Populations

I. Methods and Considerations for Enhancing Participation from Low Income Populations

The majority of PPP survey respondents were identified as low income, with an annual household income (before taxes) of less than $40,000. Of 1,140 respondents who answered the question regarding income, 890, or 78% of all respondents, were low income. In addition, input from CBOs serving low income populations was also solicited at focus group meetings held in April 2010. Following is a summary of methods suggested by CBOs or low income participants for enhancing participation from low income populations.

1a. Meeting Considerations

Focus group and survey respondents suggested that meeting organizers carefully consider meeting location and time in order to enhance participation from low income communities. Many low income participants were concerned with transportation to and from BART meetings. Some participants asked that BART "coordinate meeting times with transit schedules," ensuring that evening meetings occur "before the last bus" leaves. The vast majority of low income PPP survey respondents (65% or 488 respondents) also indicated a preference for weekend meetings over weeknight evenings or during business hours. Other participants asked that meetings be held in accessible meeting locations, near or even at a BART station, or that free transportation from BART to/from a meeting location be offered. One participant explained that many "can't budget the extra trips." Another participant also suggested that BART consider "pay[ing] for focus groups," offering some compensation to public participants who provide feedback on BART decisions. Finally, a few meeting participants asked that meeting organizers carefully consider the safety of a meeting location, requesting that meetings be located in an area considered "safe for all of us."

Another significant group of comments related to meeting amenities. Refreshments and childcare were ranked as among the top considerations that most low income respondents identified as "very important" or "somewhat important" in their decision to attend a meeting.

1b. Methods for Publicizing Participation Opportunities

Both low income meeting participants and survey respondents suggested that publicity at BART stations or trains would be one of the more effective methods for publicizing participation opportunities to low income populations. Survey respondents also suggested direct mail as an effective method. At a focus group meeting hosted by BOSS (Building Opportunities for Self-Sufficiency), an organization that serves low income populations, advocates from BOSS and other CBOs noted that BART seat drops were one of the more effective outreach methods. Other effective notification methods that were cited included flyers at turnstiles and advertisements on BART trains. Many participants also suggested that BART consider publicizing opportunities on local buses or at local bus stops.

Also, like most survey respondents, low income respondents ranked receiving information on public participation opportunities via "postcard or letter in the mail" as the preferred notification method (when compared to newspaper ads, announcements made through a CBO, BART's website, email, or telephone). However, if meetings were to be publicized through newspapers, low income participants suggested that BART use free neighborhood weekly newspapers because many consider them to be the best source of information and events in local areas. Finally, some CBOs suggested that BART publicize participation opportunities through social service agencies that serve low income populations. For example, BART could explore adding publicity to the monthly rent notices sent out by local housing agencies. A large number of PPP survey respondents (65% of 756 respondents) also indicated involvement with religiously-affiliated CBOs, as contrasted with 5%-13% indicating involvement with other types of CBOs. They also suggested CBOs that specifically serve low income communities. Therefore, these organizations may be helpful in suggesting effective outreach methods for any low income communities they may serve.

1c. Other Considerations

Many of the survey respondents among PPP development participants who were identified as low income also identified themselves as LEP. Among PPP survey respondents, the majority (78%) of low income participants were also LEP, and 84% ranked the availability of translation services as "very important" or "somewhat important" factors in their decision to attend a meeting. Because of this, public participation methods targeted towards low income populations may also need to consider the translation/interpretation needs of LEP populations. Also, a number of low income and/or LEP participants were illiterate and depended on CBOs to help them learn about topics and issues of interest, as well as to help them fill out sign-in sheets

and surveys at meetings, so methods targeted toward both these populations may need to take this into consideration as well.

II. Methods and Considerations for Enhancing Participation from LEP Populations

Well over half of PPP survey respondents were identified as LEP. Of 1,227 respondents who answered the question regarding the language they prefer to communicate in, 774, or 63% of all respondents, were LEP. In addition, input from CBOs serving LEP populations was also solicited at focus group meetings held in April 2010. The availability of interpreters at meetings and translated outreach materials is crucial to enhancing participation from LEP populations. Following is a summary of additional methods suggested by CBOs or LEP participants.

2a. Meeting Considerations

As with low income participants, focus group and survey respondents suggested that meeting organizers carefully consider meeting location, time and accessibility in order to enhance participation from LEP communities. However, since many LEP participants are not low income, they had additional suggestions as well. Some LEP participants echoed the same concerns with convenient transportation to and from BART meetings that were voiced by low income participants. Others clearly had their own transportation, but asked that meeting locations have "better parking." In addition, several LEP participants suggested that meetings have a live online video feed so that those who cannot conveniently travel to the meeting location could still participate.

Preferences for meeting time varied between different LEP populations. While Vietnamese (94% of 401) and Chinese (56% of 66) PPP survey respondents indicated a preference for weekend meetings over weeknight evenings or during business hours, Spanish PPP survey respondents (61% of 188 respondents) preferred weeknight evenings. This suggests that preferences for meeting time may be influenced by income and other factors in addition to the language spoken. Therefore, outreach efforts targeted toward LEP populations need to clarify the preferences of the specific group.

As with low income PPP survey respondents, refreshments and childcare were ranked as among the top considerations that most LEP respondents identified as "very important" or "somewhat important" in their decision to attend a meeting.

2b. Methods for Publicizing Participation Opportunities

LEP meeting participants and survey respondents, like low income participants, also suggested that publicity at BART stations or trains would be one of the more effective methods for publicizing participation opportunities to LEP populations.

LEP survey respondents also ranked receiving information on public participation opportunities via "postcard or letter in the mail" as the preferred notification method. However, LEP participants were also much more likely to suggest using ethnic media

sources and online notices to publicize meetings. Since a number of LEP meeting participants were illiterate, outreach methods that do not depend on reading, such as announcements on ethnic TV or radio stations or through CBOs, may be considered. At a meeting hosted by the Lao Family Development Center in central East Oakland, several participants suggested that phone calls in Nepalese would be most effective.

Like low income survey respondents, a much larger number of PPP survey respondents indicated involvement with religiously-affiliated CBOs rather than with other types of CBOs. They also suggested CBOs serving particular neighborhoods with a high population of LEP persons. Therefore, these organizations may be helpful in suggesting effective outreach methods for any LEP communities they may serve.

III. Methods and Considerations for Enhancing Participation from Minority Populations

The majority of meeting participants and PPP survey respondents were low income and/or LEP, but there was also significant participation from minority community members who were English-speaking and came from a variety of economic situations. At most of the focus group meetings where minority populations were predominant, including meetings in Richmond, in the San Francisco Tenderloin, at Pittsburg High School, and at the San Leandro Library, participants recommended ethnic media as one of the best methods to reach out to the public. In addition, minority participants and survey respondents suggested doing outreach at community events and through neighborhood notices, such as postings on store windows. Many participants also stressed the importance of developing a long-term relationship with community organizations that serve minorities. Some suggested that developing a community advisory committee would be the most effective means of creating such a relationship. This theme was emphasized in meetings at the South Berkeley Senior Center and the El Cerrito Community Center, in the San Francisco Mission District, and in West Oakland.

Minority PPP survey respondents had a much greater likelihood of being involved in a variety of types of CBOs including political, environmental, regional or urban planning as well as religiously-affiliated CBOs. In addition to those specifically serving minorities, the most common factor was geographic. CBOs suggested by minority meeting participants often served a particular neighborhood or region with a large minority population.

C. Menu of Public Participation Methods

The following menu of methods includes those used to inform (Public Information), reach out and invite participation (Outreach), and those to seek input (Public Input). The menu identifies how each method could best be used and is based on input collected from the community and BART staff experience. The methods are not listed in priority order, and are summarized in a matrix on page 35.

Population-specific findings from surveys conducted during the PPP development process are excerpted throughout this section; the complete data can be found in Appendix A: Population-Specific Findings from PPP Development Process Surveys. In analyzing these findings, the following definitions were used to determine low income, minority or LEP status:

- PPP survey respondents were considered to be low income if they replied to the question, "What is the total annual income of your household before taxes?" by indicating that they have an annual household income (before taxes) of less than $25,000.
- PPP survey respondents were considered to be minority if they responded to the question "What is your race or ethnic identification?" by indicating any race or ethnic identifications other than "White."
- PPP survey respondents were considered to be LEP if they responded to the question, "In which language do you prefer to communicate?" by indicating any language other than English.

1. Printed Materials Produced by BART

(Public information and outreach)

Outreach information can be publicized in print materials produced by BART such as newsletters, flyers and posters. BART newsletters include the monthly BART Times and the quarterly Fleet of the Future newsletter. BART flyers include periodic one-page Passenger Bulletins distributed at fare gates and in trains. Per the LAP, vital information in printed materials must be translated into Spanish, Chinese, Vietnamese and Korean and, potentially, into additional languages as needed. If all information cannot be translated, notices could offer translated tags, describing where to obtain translation/interpretations. LEP survey participants indicated in significant percentages a preference for translated information.

Many participants noted that the most effective notification method is the distribution of flyers/notices on or at BART trains and stations. Based on its experience, BART has also found that notices and flyers can also be effectively distributed through community partners.

PPP Community Input – Printed Materials Produced by BART

A PPP development participant emphasized the effectiveness of flyers to reach communities: "Too many of these questions assume the people who [they] are trying to reach can use the Internet. Most do not. They even have a hard time seeing a newspaper. Use TV and flyers." Community members recommended locations such as the bulletin board at local branch libraries, YMCAs, supermarkets and coffee shops.

2. Printed Materials Produced by Other Organizations

(Public information and outreach)

Coordinating with community partners can be cost-effective and can help partner organizations provide information that is of interest to the groups they represent. Information can be publicized in local and regional community newsletters, church bulletins, flyers and other publications.

2a. Local Service Providers

Local service providers regularly communicate with community members through their newsletters to provide information about local services and activities of interest. For example, Housing Authorities communicate regularly with the community they serve through rent notices. Other service providers identified by community members included: emergency food and housing centers, daytime drop-in service providers, food banks, travelers' aid groups, veterans organizations and drop-in service providers.

2b. Local Schools, Community Colleges and Universities

BART may be able to reach parents of school children by coordinating with local schools. Notices and flyers can be provided to the school, with students taking the notices home to their parents. BART may also provide translated materials as recommended by school officials. Community members who were parents or guardians of school-age children identified this as an effective method for getting information to them. Community members also suggested local universities and community colleges in order to get information to college-age students and their families.

3. BART Website

(Public information, outreach and public input)

The BART website, www.bart.gov, is a communications tool that provides substantial information about BART policies, strategies, plans and methods. BART's website offers the BART Rider Guide translated into Chinese, Spanish, Japanese, Korean, German, French and Italian (http://www.bart.gov/guide/index.aspx). BART also uses social networking applications such as Facebook and Twitter.

It should be noted that many community members have cell phones that can receive text messages, but not necessarily smart phones with internet service. Text messages may be a more effective means of sharing BART information than smart phone applications.

Many community members are not aware of the volume of information available on the BART website. Informing community members of what is available on the website is an important element of public outreach, especially outreach to LEP populations.

There were many comments from participants requesting more translated information on the BART website; for example, one Chinese-speaking LEP participant requested that BART "email in Chinese" or "use the web" because "30-40% of [LEP Chinese] use

the web. However, there was also a large number of low income, minority and LEP participants and survey respondents who do not have convenient access to the internet. Therefore BART should ensure that information and participation methods available on the website are available in alternative locations and formats so that users without access to or who prefer not to use the internet can participate. CBOs can be helpful in identifying their constituent communities' communications preferences.

4. Webcast Meetings

(Public information, outreach and public input)

BART, in venues with high-speed web-access, can webcast meetings and public participation methods to allow remote viewing and participation. Informational materials and videos can be posted online for advance review. Webcast meetings may include opportunities for web participants to ask questions or make comments through email or other web-based applications. BART currently webcasts BART Board meetings in English and is exploring the webcasting of meetings in multiple languages.

5. Postcards and Letters Distributed by Mail

(Public information, outreach and public input)

Participation methods can be publicized by letter or postcard distributed by mail. While it is costly for BART to contact all interested persons by mail (regardless of their communications preference), it can be the most effective method for reaching a specific geographic area or population group. For example, sending a postcard in English, Spanish, Chinese, Vietnamese and/or Korean to promote a participation activity may be an effective and cost efficient manner to reach members of a specific community who may be directly impacted by a specific activity.

PPP Survey Results and Community Input – Postcards and Letters Distributed by Mail

Comments made by community members throughout the PPP development process emphasized the effectiveness of direct mailings to publicize participation opportunities. Survey results received during the PPP process indicated population-specific findings regarding the use of postcards and letters distributed by mail to publicize participation opportunities.

- Receiving a postcard or letter by mail was by far the most popular method for publicizing participation opportunities among low income, LEP and minority PPP survey respondents, as follows:
    - 54% of 727 low income PPP survey respondents
    - 44% of 98 American Indian or Native PPP survey respondents
    - 61% of 551 Asian or Pacific Islander PPP survey respondents
    - 39% of 222 Spanish, Hispanic or Latino PPP survey respondents
    - 43% of 187 Spanish-speaking PPP survey respondents
    - 59% of 66 Chinese-speaking PPP survey respondents
    - 64% of 410 Vietnamese-speaking PPP survey respondents

- Although this represents less than a majority (50% or more) of respondents in several cases, that was more than twice the number of those who preferred any of the other options given.
- Black/African American PPP survey respondents preferred receiving emails to other methods. Although only 41% of 59 respondents chose receiving emails as their preference, that was more than twice the number of those who preferred any of the other options given.

6. Station Information Resources

(Public information and outreach)

Many community members expect BART stations to provide information about BART public participation methods, beyond basic fare and schedule information. Using station information resources allows BART users to stay up to date on BART public participation methods while they wait for their train. Providing this information in multiple languages assists those with limited English proficiency. BART currently provides multilingual brochures in Spanish, Chinese, Vietnamese and Korean on such subjects as safety guidelines and evacuation procedures.

Information resources located in BART stations that are used to communicate schedule and service information can be used to conduct outreach. The Destination Sign System (also referred to by community members as electronic information signs) can provide important information combined with train and other community announcements. BART newsletters, bulletin boards, information kiosks and other information stations should also be used to promote participation opportunities.

7. Media Targeted to Ethnic Communities

(Public information and outreach)

Participation opportunities can be publicized through radio, television and newspapers that serve both English speaking and language-specific audiences, including Spanish, Chinese, Vietnamese and Korean.

Some local news or radio shows and local publications, such as free neighborhood weekly papers, are considered to be good sources of information and events in the immediate area. BART should tailor its message to the appropriate audience and remind participants that they can contact BART and receive information in their preferred language. BART should continue outreach to numerous media outlets in the Bay Area that are targeted or appeal to ethnic communities. A listing of media outlets is attached as Appendix C: BART Media Outlets.

PPP Survey Results and Community Input – Media Targeted to Ethnic Communities

Survey results and community input received during the PPP process indicate that the majority of minority and LEP community members are likely to learn about BART-related methods through ethnic media such as television, radio and newspapers.

BART could continue and expand advertising and outreach to local and ethnic media sources, including TV public service announcements, radio, print and web-based outlets. Community participants also suggested that in-person appearances by BART staff or Directors on local media outlets would be particularly effective. Specific media outlet suggestions are compiled in Appendix C and designated by population, language, and/or geographic group. These suggestions will be used to inform future participation strategies.

8. Coordination with Community Events

(Public information, outreach and public input)

In cooperation with community organizations, BART should continue its current practice of hosting information tables that provide materials about BART service and outreach methods at community events and activities. These events can range in scale from large city-wide events to localized activities. CBO representatives and community members recommended that outreach be conducted in locations where people already gather, for instance, at community events such as fairs and festivals. Most community events can help BART reach specific audiences such as seniors, youth, families with children, commuters and others. Community members suggested that BART use assistance from bi-lingual community partners to ensure that LEP persons receive adequate and accurate information in their language.

Community Input – Coordination with Community Events

Community input in the form of comments received during the PPP process indicated that low income, minority and LEP participants supported BART's efforts to coordinate public participation methods with community events. PPP participants suggested the following specific events for future BART coordination: the El Sobrante Stroll, El Cerrito 4th of July, Solano Stroll in Albany, the El Cerrito Farmers Market, the San Mateo County Fair, Cinco de Mayo, and soccer games hosted by the Liga Latina Soccer League in Concord.

9. Coordination with Other Agencies

(Public information and outreach)

BART may develop partnerships with agencies that regularly communicate with local residents. BART could identify agencies in the project area by considering who serves the population and where they convene. BART may consider the following types of agencies to comprehensively reach low income, minority and LEP populations: faith-based, geographic-specific such as tenant associations, neighborhood and community, education, social services, recreation, environmental, political, youth- and senior-oriented organizations.

BART can work with these partners to provide information about public participation opportunities, included in notices and regular mailings sent by these agencies.

10. Government Meetings

(Public information and outreach)

BART can continue to provide updates on its plans and projects to federal, state and local elected officials through regularly scheduled government meetings. BART regularly sends letters and emails that summarize decisions and potential decisions. BART will need to contact these entities in advance to ensure they are on the agenda and that any helpful information can be included in the meeting packet.

11. Regular Meetings of Civic and Community Organizations

(Public information, outreach and public input)

BART can provide updates on its policies, projects, strategies and methods by participating periodically in scheduled meetings of local civic and community organizations. These gatherings provide an opportunity to make a presentation and answer questions. Depending on the meeting format, BART may also be able to solicit public input at these meetings.

12. Public Participation at BART Board Meetings

(Public information, outreach and public input)

Currently, to comment at a meeting of the BART Board of Directors, a participant must complete and submit a speaker card. Individuals are then called on in the order the speaker cards were received and are allowed to speak for a limited amount of time, usually 2-3 minutes.

BART will continue its current public participation rules, which help the Board manage the high level of participation that often occurs at BART meetings.

13. Participation by BART Directors

(Public information, outreach and public input)

Community members expressed a desire to see their local BART Directors take a more active role in all public participation methods. Community members also asked for a report of BART Director activities in their Districts as a part of each Board meeting.

Currently, calls and emails to a Director all go to one centralized phone number and email address. Some participants expressed a desire to reach their elected representative directly, similar to the way they can reach their supervisor or council person. BART staff could work with the Directors to enhance direct communication.

BART Directors could continue their efforts to attend as many public participation methods as possible and be available to communicate with residents. Community members want BART Directors to be kept fully informed of the results of public participation methods. BART staff may summarize the issues discussed and the results of public participation methods and share the information with the BART Board and the public.

14. Community Meetings

(Public information, outreach and public input)

Community members have a variety of preferences for public input opportunities at community meetings. Meeting formats should be tailored to help achieve specific public participation goals. Some meetings are designed to share information and answer questions. Others are designed to engage the public in providing input, establishing priorities and helping to achieve consensus on a specific recommendation. It is important to create an agenda that works to achieve BART's goals but is relevant to and not overwhelming for the public.

For all meetings, the venue should be a facility that is fully accessible for persons with disabilities and, preferably, is served by public transit. The venue should be a location that is familiar and comfortable for the target audience. If a series of meetings are scheduled on a topic, BART may consider different meeting locations, since no one location is usually convenient to all participants.

14a. Community Meeting Formats

i. Open House

(Public information, outreach and public input)

This format provides opportunities for participants to receive information at their own pace by visiting a series of information stations that may include table top displays, maps, photographs, visualizations and other tools. Individual questions are responded to by staff and technical experts. Some open houses include a short educational presentation and comment period at a designated time. Participants are often given comment cards so they can provide written comments. Staff may be assigned to take verbal comments and transcribe them to provide a written record. The Open House Format can be effective when BART is seeking to introduce a new concept or when a lengthy process has been finalized and BART is sharing the final results.

ii. Workshops

(Public information, outreach and public input)

Workshops feature an educational presentation designed to orient participants to the issue being discussed. Workshops often include break-out or discussion groups, where participants have the opportunity to discuss topics in small groups. Participants can share their feedback orally during the small group discussion and in writing on comment cards.

Workshops include the use of tools that promote interaction and may include: electronic or show-of-hands polling, mapping exercises, discussion questions, priority setting methods and other techniques to promote dialogue and discussion.

iii. Large Group Discussion

(Public information, outreach and public input)

These meetings are usually focused on a specific topic and feature an informational presentation followed by a comment period. The comment period can be formal or informal depending on the number of participants and the meeting venue. Individual comments are often limited to 2-3 minutes, especially when there are a large number of people wanting to comment. This format can also include some interactive techniques suitable for a large group such as electronic or show of hands polling or short questionnaires or surveys.

PPP Survey Results and Community Input – Community Meeting Formats

Survey results received during the PPP process indicated population-specific findings regarding community meeting formats. Note that this data is not meant to indicate that only the method receiving the largest number of votes should be used in isolation – a variety of methods is important.

Participants in the PPP development process were given a list of input methods and asked to select one or more of the methods that they thought would help them express their views at meetings. The most popular methods among PPP survey respondents for expressing their views at community meetings were as follows:

- Low income (57% of 756 respondents), Asian or Pacific Islander (65% of 575 respondents), Spanish, Hispanic or Latino (58% of 230 respondents), Spanish-speaking (63% of 193 respondents), Chinese-speaking (69% of 67 respondents), and Vietnamese-speaking (77% of 413) PPP survey respondents indicated that they preferred to express their views through having a translator present at community meetings.
- Spanish-speaking (63% of 193) PPP survey respondents also preferred to use written translated material at community meetings.
- American Indian or Native (51% of 101) PPP survey respondents preferred large group discussions to express their views at community meetings.
- Black/African American (52% of 64) PPP survey respondents preferred small group discussions to express their views at community meetings.
- Electronic voting was the least preferred method of expressing views at community meetings for low income and LEP PPP survey respondents, as follows:
    - 4% of 756 low income PPP survey respondents
    - 5% of 193 Spanish-speaking PPP survey respondents
    - 6% of 67 Chinese-speaking PPP survey respondents
    - 2% of 413 Vietnamese-speaking PPP survey respondents

- A low income PPP development participant emphasized the importance of weighing all input, including community comments and surveys. He stated, "My main concern with voting methods such as electronic or voting by hand at public meetings is being forced to choose options that no one agrees with. There should always be the option for people to express alternatives, or not agree with any proposals presented."

Participants in the PPP development process were also asked to select one or more preferences from a list of methods for having detailed materials presented to them for a meeting. The most popular methods among PPP survey respondents for having detailed materials presented to them for a meeting were as follows:

- Spanish-speaking (58% of 193 respondents), American Indian or Native (53% of 101 respondents), Black/African American (53% of 64 respondents), and Spanish, Hispanic or Latino (57% of 230 PPP survey respondents indicated that they preferred to have detailed information presented to them at community meetings via a live presentation.
- Vietnamese (59% of 413) PPP survey respondents preferred to review information online before a community meeting.

14b. Community Meeting Considerations

i. Scheduling

BART staff could coordinate the scheduling of community meetings with community partners to minimize conflicts. However, some scheduling conflicts may be unavoidable when a public participation activity is urgent or linked to a time-sensitive topic.

ii. Meeting Locations

Convenient and comfortable meeting locations are key to soliciting active public participation, particularly in low income, minority and LEP communities. BART can host meetings in venues recommended by community members who understand their community dynamics best.

Community members identified locations specific to their area including the local branch libraries, YMCA, local school or community college, churches and many others. It is important that meetings are held in different venues since it is unlikely that no one location is ideal for all community members. Meeting locations can be rotated to ensure access for as many community members as possible. Community partners should be reminded that regardless of the popularity or convenience of a venue, BART is required to conduct all public participation methods in locations that are fully accessible to persons with disabilities and, preferably, the venues should be served by public transit.

iii. Meeting Times

A convenient meeting time is important to low income, minority and LEP survey participants. Public participation methods can be scheduled at varying times of day and on different days of the week Survey data indicates that the majority of community members prefer meetings to be held on weekends. Weeknights after traditional work hours are also acceptable. Fewer community members can participate during the workday; however, seniors are more likely to attend daytime activities scheduled during the week.

PPP Survey Results and Community Input – Meeting Times

Survey results received during the PPP process indicated distinct population-specific preferences regarding meeting times among PPP survey respondents, as follows:

- Low income (65% of 746 respondents), Asian or Pacific Islander (80% of 470 respondents), Chinese-speaking (56% of 66 respondents), and Vietnamese-speaking (94% of 411) PPP survey respondents prefer meetings to be held on weekends.
- Spanish-speaking (61% of 188 respondents), American Indian or Native (51% of 100 respondents) Black/African American (72% of 64 respondents) and Spanish, Hispanic or Latino (61% of 225) PPP survey respondents prefer weeknight meetings.

iv. Number of Meetings

Some transportation decisions require more meetings than others. BART has held anywhere from two to more than twenty meetings for system-wide decisions. For decisions that affect one or two existing stations, BART has held anywhere from one to three meetings. The number of meetings will depend on the project.

v. Childcare and Refreshments

Many adults with childcare responsibilities can only participate if childcare is provided. Childcare services can be available on-site and provided by a community partner staff or volunteers who are screened to work with youth and have appropriate training. Bi-lingual childcare providers may also be needed, depending on community interpretation needs. BART will need to receive requests for childcare at least 72 hours in advance. Community members suggested that many community members are more likely to attend if refreshments are provided, especially if the meeting is held close to meal time.

PPP Survey Results – Childcare and Refreshments

Survey results received during the PPP process indicate the following population-specific findings regarding childcare and refreshments being provided at meetings:

- Childcare was identified as a "very important" or "somewhat important" factor in their decision to attend a BART-related meeting by low income, minority and LEP PPP survey respondents, as follows:
  - 82% of 331 low income PPP survey respondents
  - 76% of 89 American Indian or Native PPP survey respondents
  - 67% of 163 Asian or Pacific Islander PPP survey respondents
  - 67% of 55 Black/African American PPP survey respondents
  - 89% of 205 Spanish, Hispanic or Latino PPP survey respondents
  - 94% of 168 Spanish-speaking PPP survey respondents
  - 85% of 33 Chinese-speaking PPP survey respondents
  - 68% of 59 Vietnamese-speaking PPP survey respondents
- Refreshments being provided at meetings was identified as a "very important" or "somewhat important" factor in their decision to attend a BART-related meeting by low income, minority and PPP survey respondents, as follows:
  - 92% of 676 low income PPP survey respondents
  - 87% of 90 American Indian or Native PPP survey respondents
  - 92% of 508 Asian or Pacific Islander PPP survey respondents
  - 73% of 55 Black/African American PPP survey respondents
  - 86% of 199 Spanish, Hispanic or Latino PPP survey respondents
  - 86% of 162 Spanish-speaking PPP survey respondents
  - 84% of 60 Chinese-speaking PPP survey respondents
  - 96% of 365 Vietnamese-speaking PPP survey respondents

15. Focus Groups

(Public information, outreach and public input)

BART will continue to host discussion groups held with small, targeted groups of participants. Focus groups can provide in-depth information about projects, plans or issues that may impact a specific group or community. These groups can be both formal and informal and can be conducted in a specific language. BART will proactively include low income, minority and LEP communities.

PPP Survey Results and Community Input – Focus Groups

Many participants expressed discomfort with large meeting formats. Survey results received during the PPP process indicate the following population-specific findings regarding focus groups:

- Focus groups were identified as one of the best methods other than a community meeting to provide input to BART by low income, minority and LEP PPP survey respondents as follows:
    - 86% of 329 low income PPP survey respondents
    - 50% of 101 American Indian or Native PPP survey respondents
    - 88% of 191 Asian or Pacific Islander PPP survey respondents
    - 84% of 51 Black/African American PPP survey respondents
    - 92% of 162 Spanish, Hispanic or Latino PPP survey respondents
    - 97% of 128 Spanish-speaking PPP survey respondents
    - 87% of 39 Chinese-speaking PPP survey respondents
    - 95% of 88 Vietnamese-speaking PPP survey respondents

16. Special Events

(Public information, outreach and public input)

BART can develop special events to announce, highlight or kick-off its outreach about a policy, program, project or activity. Events can be region-wide or focus on a specific station or geographic area. An example might be to convene town hall meetings in each Board member's district. Along with providing information and/or collecting input, the events should include something interactive and/or entertaining to attract participation.

17. Walking Tours and On-Site Meetings

(Public information, outreach and public input)

BART can host walking tours and on-site meetings specific to locations that interest the public, in order to highlight an initiative, project or facility. Walking tours can be primarily educational and BART may ask participants to complete a survey or questionnaire during or after the tour. Walking tours may be helpful in helping BART collect community opinion on issues such as station improvements and proposed extensions. BART can work with community partners to host language specific meetings. For example; meetings can be held for specific populations in Spanish-only, Chinese-only, Vietnamese-only and Korean-only.

18. Key Person Interviews

(Public information, outreach and public input)

BART staff and Directors could continue to meet individually with community leaders and stakeholders to exchange information and gain early insight into upcoming outreach and engagement methods. BART will specifically include low income, minority and LEP populations. Interviewees are asked the same set of questions to allow BART to compare responses and identify key themes and issues. BART may contact interviewees throughout the span of a project or activity to keep them engaged in the public participation process.

19. Surveys

(Public information, outreach and public input)

BART may conduct surveys in print, by telephone and online to collect public opinion on specific topics or issues. Web surveys provide general qualitative data, since it is difficult to control who responds. Print surveys can also provide substantial information, but response rates are typically low.

Depending on the data being collected, BART should consider methodologies that provide statistically valid data when possible. BART should also consider strategies for letting people know that surveys are available in multiple languages, so as to increase the response rate from low income, minority and LEP populations.

20. Telephone Information and Comment Line

(Public information, outreach and public input)

All BART Station Agents, BART Police and Call Center Operators have access to Language Line Services (LLS), which is an over-the-phone language interpretation service. The Service allows BART Station Agents to call the LLS number when a customer is unable to speak English. The professionally trained and tested LLS interpreters listen to the customer, analyze the message and accurately convey its original meaning to the BART staff member, then respond to the customer in his/her own language. The LLS offers interpretation in 170 languages.

Non-English speaking attendees at community meetings advocated strongly for future BART messages in more languages. BART could work not only to translate future BART messages into these languages, but also to ensure that it better promotes the services currently available to non-English speakers, such as LLS, to make the system more accessible and user-friendly to all communities. New Language Assistance Services outlined in the LAP aim to increase LEP population access to services and benefits in the BART system.

PPP Survey Results and Community Input – Methods of Providing Input to BART Other than Community Meetings

Participants in the PPP development process were asked to rank various methods of providing input to BART in addition to community meetings by indicating whether they were "very likely," "somewhat likely," or "not likely" to use a particular method.

Survey results indicate the following population-specific findings regarding most preferred input methods:

- Low income (73% of 468 respondents), Asian or Pacific Islander (74% of 322), and Vietnamese-speaking (92% of 205) PPP survey respondents prefer writing a letter to BART in order to provide their input.
- Spanish, Hispanic or Latino (75% of 162 respondents), Spanish-speaking (80% of 128) and Chinese-speaking (73% of 37) PPP survey respondents prefer participating in focus groups in order to provide their input to BART.
- American Indian or Native PPP survey respondents (44% of 101) prefer providing their input to BART via mail-back surveys.
- Black/African American PPP survey respondents (63% of 52) prefer providing their input to BART via online surveys.

However, because all respondents did not necessarily rank all methods, the sample size varies greatly from method to method. Also, in many cases the distinction between preferences is not particularly great. Therefore, a variety of methods for providing input to BART should be made available to community members.

21. Community Advisory Committee on Title VI Compliance

(Public information, outreach and public input)

Several community groups, minority and LEP participants recommended that BART develop a local advisory group to provide advice on public participation methods. BART believes that the creation of a Title VI Community Advisory Committee (CAC) has merit and can consider the feasibility of such a committee, given capacity and availability of resources. Currently, BART supports three community advisory groups: the Business Advisory Committee, Citizens Oversight Committee for the Earthquake Safety Program and the Citizen Review Board of the BART Police Department.

BART Public Participation Plan - Toolbox of Public Participation Methods

Public Participation Method	Printed Materials		BART Website and Social Networking Methods						Postcards and Letters Distributed by Mail			Email			Media Targeted to Ethnic Communities*			Partnerships with CBOs				Coordination		Participation by BART Directors	Community Meetings												Community Meeting Considerations							Surveys		Telephone information and comment line	Community Advisory Committee	Key Person Interviews	Station Information Resources	Government meetings	Regular meetings of civic and community organizations	Public participation at BART Board Meetings
																									Open House		Workshops																									
	Produced by BART	Produced by other organizations	BART website	Information for review online prior to community meeting	Online video for review prior to community meeting	Online discussion	Webcast meetings	Inform Participants after meetings on BART website	Notify of BART public participation opportunities	Report public participation results	Provide input to BART	Notify of BART public participation opportunities	Report public participation results	Provide input to BART	Radio	Newspapers	Television	Religious	Political	Environmental	Urban/Regional Planning	With community events	With other agencies			Table top displays, maps, charts, etc.	Live presentations	Small group discussion	One-on-one discussion	Electronic voting	Written survey	Show-of-hands voting	Large Group Discussion	Special Events	Walking Tours and on-site meetings	Focus Groups	Available translation services	Translated written materials	Scheduling	Convenient meeting locations	Meeting Times - weekends	Meeting Times - weeknights	Childcare and refreshments	Printed and mail back	Online							
Low income																																																				
Low income	●	●	●	○	○	●	○	○	●	●	●	○	○	●	●	●	●	●	○	○	○	●	–	●	–	○	○	○	○	○	○	○	○	–	–	●	●	○	–	●	●	○	●	●	●	●	●	–	–	–	–	–
Minority																																																			
American Indian or Native Alaskan	●	●	–	○	○	○	○	○	●	●	○	○	○	○	–	–	–	●	○	○	○	●	–	●	–	○	●	○	○	○	○	○	●	–	–	●	○	○	–	●	○	●	●	●	●	○	●	–	–	–	–	–
Asian or Pacific Islander	●	●	–	●	○	●	○	○	●	●	●	○	○	●	●	●	●	●	○	○	○	●	–	●	–	○	○	○	○	○	○	○	○	–	–	●	●	○	–	●	●	○	●	●	●	●	●	–	–	–	–	–
Black or African American	●	●	–	○	○	●	○	○	○	○	●	●	●	●	–	–	–	●	○	○	○	●	–	●	–	○	●	●	○	○	○	○	○	–	–	●	●	○	–	●	○	●	●	–	●	●	●	–	–	–	–	–
Spanish, Hispanic or Latino	●	●	–	○	○	●	○	○	●	●	●	○	○	●	●	●	●	●	○	○	○	●	–	●	–	○	●	○	○	○	○	○	○	–	–	●	●	●	–	●	○	●	●	●	●	●	●	–	–	–	–	–
Limited English Proficiency																																																			
Spanish-speaking	●	●	–	○	○	●	○	○	●	●	●	○	○	●	●	●	●	●	○	○	○	●	–	●	–	○	●	○	○	○	○	○	○	–	–	●	●	●	–	●	○	●	●	●	●	●	●	–	–	–	–	–
Chinese-speaking	●	●	–	○	○	●	○	○	●	●	●	○	○	●	●	●	●	●	○	○	○	●	–	●	–	○	○	○	○	○	○	○	○	–	–	●	●	○	–	●	●	○	●	●	●	●	●	–	–	–	–	–
Vietnamese-speaking	●	●	–	●	○	●	○	○	●	●	●	○	○	○	●	●	●	●	○	○	○	●	–	●	–	○	○	○	○	○	○	○	○	–	–	●	●	○	–	●	●	○	●	●	●	●	●	–	–	–	–	–
Korean-speaking	●	●	–	–	–	–	○	–	●	●	●	○	○	○	●	●	●	●	○	○	○	●	–	●	–	○	–	○	–	○	–	–	–	–	–	–	–	–	–	–	–	–	●	–	–	○	●	–	–	–	–	–
Russian-speaking	●	●	–	–	–	–	○	–	●	●	●	○	○	○	●	●	●	●	○	○	○	●	–	●	–	○	–	○	–	○	–	–	–	–	–	–	–	–	–	–	–	–	●	–	–	○	●	–	–	–	–	–
Tagalog-speaking	●	●	–	–	–	–	○	–	●	●	●	○	○	○	●	●	●	●	○	○	○	●	–	●	–	○	–	○	–	○	–	–	–	–	–	–	–	–	–	–	○	●	●	–	–	○	●	–	–	–	–	–

** Ethnic Media Resources include:*

	Television	Newspaper
Spanish-speaking	Telemundo 18, Univision 14	El Mensajero, El Tecolote
Chinese-speaking	Channels 8 and 26	Sing Tao Daily, World Journal
Vietnamese-speaking	Cable 6, Channel 26	Mo, Thoi Bao, SaiGon Nho
Korean-speaking		Korean Times, Korean Daily Times
Russian-speaking	Channel One Russia	Russkaya Zhizn, New Life, Vzglyad
Tagalog-speaking	Channels 8, 23, 26 and TFC	Philippine News, Philippines Today

Legend

● = Public participation method preferred by PPP development participants
○ = Public participation method not preferred by PPP development participants
– = Public participation method with no strong preference or not discussed by PPP development participants

This page deliberately left blank

D. BART's Ongoing Public Participation Methods

(Public information, outreach and public input)

BART will continue to promote and enhance the use of its ongoing public participation methods to reach out to low income, minority and LEP populations. BART will conduct proactive outreach to expand the reach, inclusivity and effectiveness of these ongoing methods. Many community members participating in the development of this plan are not fully aware of these resources and BART should conduct specific methods to promote their use. Examples of these existing methods include:

- BART website (www.bart.gov)
- BART Facebook page
- BART communications via Twitter
- Regular newsletters distributed through BART stations
- Regular communications with media
- BART Board meetings
- Key person interviews
- Focus groups
- Partnerships with CBOs
- Communication with elected officials
- Press briefings and news releases
- Regular emails to community members
- Participation in community fairs and festivals
- Sponsorship of major community events
- Passenger bulletins in stations
- Mailings to neighbors of stations
- Educational tours and briefings
- Language Line Services (LLS)
- Language interpreters at public meetings
- Written language assistance services

BART is committed to reducing the barriers encountered by LEP persons in accessing its services and benefits, to the extent resources are available. BART will also evaluate how to consolidate its language assistance measures to deliver the most cost-effective services.

V. PUBLIC PARTICIPATION STRATEGY EXAMPLES

During the PPP review process, community members expressed requests for a more tailored public participation strategy for their community or neighborhood.

The following public participation strategy examples can be utilized as guides to develop a project-specific, tailored strategy, once a project is identified as having impacts on low income, minority and LEP communities. The following examples demonstrate the level of specificity BART could provide when developing a public participation strategy at the community level.

The following public participation strategy examples include an example strategy useful for a variety of BART project types and strategies created and implemented utilizing the principles of the PPP for specific BART projects. Each strategy example is detailed to demonstrate how population-appropriate outreach methods can be and were identified and utilized to develop and conduct transportation decision-specific outreach strategies. Each strategy follows basic public participation steps:

- Identify target populations and public participation needs;
- Coordinate internally to identify methods and develop public participation strategy;
- Coordinate with CBO partners;
- Conduct outreach;
- Identify language needs per the LAP;
- Implement public participation strategy; and
- Compile, review and report results.

These strategy examples may be used to guide, rather than prescribe, the development of future targeted outreach strategies.

A. Example of Public Participation Strategy for BART Projects

This example could be adapted for a variety of scenarios such as a construction project, service change or fare increase.

The public participation strategy for the example project would be communicated broadly throughout the BART service area. BART would use its ongoing tools, which are well-established and reach a wide audience. There would also be significant public participation activities focused in the different communities, especially those most impacted by BART's proposal.

At the community level, BART would take the following steps to implement a geographically focused public participation strategy:

Identify Target Populations and Public Participation Needs

- Perform demographic analysis of the population.
- Identify significant populations for targeted outreach.

Coordinate Internally

- Government and Community Relations Department (GCR), Office of Civil Rights (OCR), and the project team determine the most appropriate form of outreach to be meetings and determine the goals and objectives for the meeting.
- Develop a draft public participation strategy.

Coordinate with CBO Partners

- Identify all CBO partners by considering the following in the project area: who serves the population and where they convene.
- Consider the following types of CBOs to comprehensively reach low income, minority and LEP populations within the project area: faith-based, geographic-specific such as tenant associations, neighborhood and community, education, social services, recreation, environmental, political, youth- and senior-oriented organizations.
- Clearly explain the desired outcomes for the different public participation methods such as sharing information, collecting input and setting community priorities.
- Identify the best way to publicize the public participation methods, select meeting dates and venues, and determine translation needs. The community advisors can help BART avoid potential scheduling conflicts and take advantage of existing events where they can easily reach a significant number of community members.
- Identify the recommended participation methods to achieve these outcomes. For example, a CBO may recommend a meeting format that allows small group discussion so that participants have an opportunity to discuss and understand the information being presented. For a construction project, BART might host some on-site informational tours to help community members better understand the impact the project would have on their immediate neighborhood.

Conduct Outreach

- Work to publicize the activities, identify performance measurements and set targets for participation from the area.
- Ensure that flyers, notices and other outreach methods clearly describe the issue and purpose of the meeting or public participation activity.
- Identify a specific number and sequence of public participation methods and clearly communicate how BART decision makers would use the public input.

Identify Language Service Needs

- Identify language interpretation needs, translate outreach documents, and provide language interpretation services at the activity.

Implement Public Participation Strategy

- Implement the methods identified in the public participation strategy.

Compile, Review and Report Results

- Continue to review the participation goals established at the beginning of PPP strategy development and monitor progress and performance.
- Regularly update the community on the status of the issue and identify additional opportunities for community input.
- Make sure the community is aware of key decision-making activities, such as Board meetings, where action would be taken, so community members can see how the decision was made.
- Communicate the results back to the community, providing a record of the number and characteristics of participants and date, time and location of meetings, and describing the rationale for how and why suggestions made through community input were or were not implemented.

B. Specific Project Examples

Specific Project Example 1

This project is a 10-mile extension eastward from the Pittsburg/Bay Point BART Station near Hillcrest Avenue. Construction began in late 2010. Service opening is scheduled for 2015 and will coincide with the completion of the widening of State Highway 4.

In July 2010, BART hosted three meetings to solicit input from East Contra Costa County community members regarding station access, span of service, fare and travel times.

Identify Target Populations and Public Participation Needs

- Performed demographic analysis of the population within the project corridor.
- Identified significant populations for targeted outreach; low income, minority and LEP populations.

Coordinate Internally

- GCR, OCR, and the project team determined the most appropriate form of outreach to be meetings and determined the topics.
- Determined the locations for three meetings to cover the entire corridor based on the demographic analysis and recommendations from community leaders. Meetings were scheduled in the cities of Pittsburg, Antioch and Brentwood.
- Developed public participation strategy.

Coordinate with CBO Partners

- GCR researched and identified the following specific, local organizations through which to conduct targeted outreach to Blacks, Hispanic and Latinos, Asian and Pacific Islanders, low income and Spanish and Chinese language

speaking corridor residents: ALIVE – Futures Explored, Inc. (developmentally disabled community); NAACP, Antioch; Monument Community Partnership, Concord; La Clinica, Pittsburg; West County Toxics Coalition, Dr. Henry Clark (multi-racial, low income); Contra Costa Interfaith Supporting Community Organization (CCISCO); Antioch Church Family; Holy Rosary Church, Antioch; Antioch Christian Center; Community Presbyterian Church, Pittsburg; Immaculate Heart of Mary, Brentwood; and Golden Hills Community Church, Brentwood.

Conduct Outreach

- Meeting agenda produced in English, Spanish and Chinese.
- Created a meeting notice in multiple languages (English, Spanish and Chinese) for conventional mail distribution and circulation at community and civic organizations.
- Mailed multi-lingual meeting notice to a half-mile radius around each meeting location, as follows: Antioch, Nick Rodriguez Community Center, 625 notices mailed; Pittsburg, Pittsburg Senior Center, 1,550 notices mailed; Brentwood, Brentwood Senior Center, 1,200 notices mailed.
- GCR, OCR and Planning drafted a meeting survey instrument which was produced in English, Spanish and Chinese.
- Distributed multi-lingual meeting notices to environmental advocacy groups in the corridor: Transform, Sierra Club, East Bay Bicycle Coalition and Sustainable Contra Costa.
- Posted meeting flyers at Senior Centers, Community Centers, Libraries, City Halls, Pittsburg/Bay Point BART station and on cars at Brentwood and Antioch Park and Ride lots.
- Informed the staffs of the following City, County, State and Federal elected officials of upcoming meetings and asked them to share the information with their constituents: City Councils and Mayors of Pittsburg, Antioch, Oakley, Brentwood; Contra Costa County Supervisors; State Assembly members and Senator; and U.S. Congressional Representatives.
- Contacted local City Managers and Planning Commissioners to inform them of meetings.
- Contacted local transportation planning agency/groups and requested that meeting flyer be distributed among members (CCTA, 511.org, TRANSPLAN).
- Contacted and informed other transit agencies in the corridor (Tri Delta, AC Transit, County Connection).
- Requested all cities, county and chambers of commerce to post the meeting notice on their website.
- Electronically posted meeting notice including: BART website, project page, Facebook and Twitter.
- Advertised meetings in local newspapers including: Contra Costa Times, Antioch Press, Brentwood Press, and El Mundo, among others.

- Utilized an email list/database created through the project to send out meeting notice via email blast.

Identify Language Service Needs

- Spanish language interpretation was requested for one meeting and translation services were provided.

Implement Public Participation Strategy

- Implemented public participation strategy, which included three public meetings.

Compile, Review and Report Results

- Compiled and reviewed results.
- Reported results.

Specific Project Example 2

BART is preparing a station access plan for the Daly City BART station area. The plan focuses on key elements including the bus intermodal facility; bike, pedestrian and station circulation issues related to access and safety; and consideration of possible amenities including wayfinding signage and real time technology. The plan area encompasses a half-mile radius around the station and straddles the southern edge of San Francisco and the northern edge of Daly City.

In Spring 2011, BART hosted two community meetings to solicit input from Daly City and San Francisco community members who live in the study area. The study continues through 2011, with a third meeting planned for Summer 2011. Completed study / final report is anticipated in Fall 2011.

Identify Target Populations and Public Participation Needs

- Performed demographic analysis of the population within the study area.
- Identified significant populations for targeted outreach; low income, minority (Asian, Hispanic) and LEP (Tagalog) outreach to a large Pilipino population and smaller Spanish speaking population.

Coordinate Internally

- GCR, OCR and Planning determined the most appropriate form of outreach to be meetings.
- Determined the meeting locations would be central, accessible and walkable to the study area.

Coordinate with CBO Partners

- GCR researched and identified specific, local organizations through which to conduct targeted outreach low income, Asian, Hispanic and Tagalog and Spanish language speakers in the study area: North Peninsula Neighborhood

Services Center; El Concilio of San Mateo (Spanish speakers, low income); Pilipino Bayanihan Resource Center (Asian, Tagalog and Spanish speakers); North Peninsula Food Pantry & Dining Center of Daly City; Liwanag Kultural Center (Asian); Daly City Community Service Center (multi-cultural); Filipino Community Center (Asian, Tagalog speakers); Pacifica Resource Center (Asian, Hispanic, low income, Spanish and Tagalog speakers); St. Bruno's Catholic Church (multi-cultural, low income); Legal Aid Society of San Mateo; Samaritan House (low income); Merced Extension Triangle Neighborhood Association; Doelger Senior Center; City of Daly City Planning Department; City of San Francisco Office of Supervisor Sean Elsbernd; War Memorial Community Center; Westlake Community Center; Colma Community Center; Lincoln Community Center; Parkmerced; San Francisco State University (multi-cultural, low income); Alma Via of San Francisco (senior housing).

- Partnered with local community-based organization (Pilipino Bayanihan Resource Center to conduct extensive outreach and host community meeting).

Conduct Outreach

- Created and hand-distributed first meeting notice to BART passengers who use the Daly City BART Station during morning and evening peak commute periods, as well as conventional mail distribution, and circulation by hand to local organizations, community leaders, businesses and community-based organizations
- Created multi-lingual meeting notice for BART passengers who use the Daly City BART Station during morning and evening peak commute periods, as well as conventional mail distribution, and circulation by hand to local organizations, community leaders, businesses and community-based organizations.

Identify Language Service Needs

- Translation services were offered but no requests were submitted.

Implement Public Participation Strategy

- Implementing public participation strategy, which includes three community meetings.

Compile, Review and Report Results

- Will compile and review results.
- Will report results.

Specific Project Example 3

The purpose of this project is to implement BART's Strategic Maintenance Plan and to accommodate an expanded fleet. Project construction will take place in two Phases, with Phase 1 construction potentially beginning in 2012.

In October 2010, BART hosted a public meeting to discuss and solicit input from community members regarding the proposed project.

Identify Target Populations and Public Participation Needs

- Performed demographic analysis of the population surrounding the project area (Hayward and Union City).
- Identified significant populations for targeted outreach: low income and LEP persons (Spanish, Chinese and Tagalog language speakers).

Coordinate Internally

- GCR, OCR and project staff determined the most appropriate form of outreach to be a meeting and determined the goals and objectives of the community meeting.
- Developed public participation strategy.

Coordinate with CBO Partners

- GCR researched and identified specific, local organizations through which to conduct targeted outreach to low income and Spanish- and Tagalog-speaking area residents.

Conduct Outreach

- Created a meeting notice in multiple languages (English, Spanish and Tagalog) for conventional mail distribution and circulation through community and civic organizations.
- Mailed a multi-lingual meeting notice to approximately 4,600 residents and 600 businesses within a one-mile radius of the project.
- Posted a multi-lingual meeting notice on BART website and distributed it to the following community and municipal organizations: Afghan & International Refugees Support Services, Alameda County One Stop Career Center, Centro de Servicios, Continental Mobile Home Park, Daison Japan (Asian and Pacific Islander Market), Eden Area YMCA, Hayward City Hall, Hayward Day Labor Center, Hayward Family Resource Center, Hillview Baptist Church, Hillview Crest Elementary School, Kennedy Community Center, La Familia Counseling Services, Lincoln Child Center, Marina Food (Asian and Pacific Islander Market), Masjid Abubaker Siddiq (Islamic Mosque), New Haven Adult School, Nichiren Buddhist Center International Center, Our Lady of the Rosary Parish, Rental Housing Owners Association of Hayward, South Hayward Parish, Spanish Ranch Mobile Home Park No. 2, Tiburcio Vasquez Health Center, Union City Library, and the City Hall of Union City.
- Advertised meetings in local and ethnic newspapers including: Tri-City Voice, Sing Tao (Chinese), Philippine News (Tagalog), and Philippines Today (Tagalog).

Identify Language Service Needs

- Chinese language interpretation was requested for one meeting and translation services were provided.

Implement Public Participation Strategy

- Implemented public participation strategy, which included one public meeting.

Compile, Review and Report Results

- Compiled and reviewed results.
- Reported results. Project information on the comment period and meeting was made available on the BART website in English, Spanish, Chinese, Korean, Vietnamese and Tagalog.

Specific Project Example 4

This project is a 5.4 mile extension of the end of the line in Fremont to a new station. Construction is underway and anticipated to be complete in late 2014.

In April 2011, BART hosted two public meetings to solicit input from southern Alameda County and northern Santa Clara County residents on key station elements including access, parking, fares and amenities. Express bus riders along the corridor were also surveyed.

Identify Target Populations and Public Participation Needs

- Performed demographic analysis of the population within the corridor.
- Identified significant populations for targeted outreach: Hispanic, Asian and Pacific Islander and LEP persons (Spanish, Chinese, Vietnamese and Korean language speakers).

Coordinate Internally

- GCR, OCR and project staff determined the most appropriate form of outreach to be two meetings and a field survey.
- Determined the locations for two meetings within the corridor based on the demographic analysis and recommendations from community leaders. Meetings were scheduled in Fremont and Milpitas.
- Developed public participation strategy.

Coordinate with CBO Partners

- GCR researched and identified the following specific local organizations through which to conduct targeted outreach to Spanish-, Chinese-, Vietnamese- and Korean-speaking corridor residents: Fremont Family Resource Center; Bay Area Immigration and Refugee Services (BAIRS); South Bay Chinese Club; India Community Center; Milpitas Food Pantry; The Family Giving Tree; Jain Center of Northern California; LIFE Eldercare.

Conduct Outreach

- Performed field surveys in Downtown San Jose and at Fremont BART Station of express bus riders along the corridor.
- Contacted and worked with Santa Clara Valley Transit Authority (VTA) staff to inform them of the outreach process and determine what outreach they have done for the VTA BART extension project.
- Created a meeting notice in multiple languages (Spanish, Chinese, Vietnamese and Korean). Also, included a tag line in Persian and Hindi informing the speakers of those two languages that translation services and child care can be made available if requested 72 hours in advance of meeting time.
- Mailed multi-lingual meeting notice to a half-mile radius around each meeting location, as follows: Fremont, Warm Springs Community Center, 1,752 notices mailed; Milpitas, Milpitas Community Center, 893 notices mailed.
- GCR, OCR and project staff drafted a meeting survey instrument and field survey instrument which was produced in Spanish, Chinese, Vietnamese and Korean.
- Informed City staff and County elected officials of upcoming meetings and asked them to share the information with their constituents, including: City Councils and Mayors of Fremont and Milpitas, Local Chambers of Commerce, and Alameda County Board of Supervisors.
- Contacted local City Managers and Planning Commissioners to inform them of meetings.
- Electronically posted meeting notice including: BART website, project page, Facebook and Twitter.
- Advertised meetings in the following newspapers: Milpitas Post, Fremont Bulletin, Tri City Voice, India West, Vision Hispaña (Spanish), Kyocharo News (Korean), World Journal (Chinese) and Vietnam Daily News (Vietnamese).
- Contacted local neighborhood and business groups to request the distribution of the multi-lingual meeting notice, including: Irvington Business Association, Warm Springs Business, Community Association, Niles Main Street and Avalon HOA.
- Called and visited local community-based and faith based organizations including: South Bay Community Church, Fremont; First Baptist Church, Fremont; Church of Jesus Christ of Latter Day Saints, Fremont; Warm Springs Church, Fremont; Cross Point Church of Silicon Valley, Milpitas; Saint John the Baptist, Milpitas; Milpitas Community Church, Milpitas; India Community Center, Milpitas; Barbara Lee Senior Center, Milpitas; League of Women Voters; National Federation for the Blind; Fremont/Newark YMCA, California School for the Deaf, Fremont; Irvington Community Center, Fremont; Bay Area Community Services Center, Fremont; Warm Springs Community Center, Fremont; and Northwest Polytechnic University, Fremont.
- Contacted and informed other transit agencies in the corridor (AC Transit, VTA).

Identify Language Service Needs

- Korean language interpretation was requested for one meeting and translation services were provided.

Implement Public Participation Strategy

- Implemented public participation strategy, which included two public meetings.

Compile, Review and Report Results

- Currently compiling and reviewing results.
- Will report results.

VI. PERFORMANCE MEASURES AND OBJECTIVES

A. Monitoring and Tracking

Public Participation Plan

Community members emphasized accountability during the process of developing the PPP. BART's Office of Government and Community Relations will monitor and track its public participation methods and share results in a transparent way. This includes being clear about process timelines and changes at BART that affect public participation methods.

BART already has some information about the reach of its ongoing methods. For example, BART currently tracks how many people receive notifications by email or text and through its Facebook page. BART also tracks website hits, telephone inquiries, the number of newsletters distributed through its stations and other measures of community contacts. BART staff track the number of inquiries and comments they receive by phone, email and in-person.

These numbers can help track communication methods, but additional measurements will be needed to determine if public participation goals are being met. Depending on the nature and scale of the topic or decision at hand, BART will identify specific measurable objectives for public participation methods.

Some measurable performance objectives BART will consider include:

- Number of participants attending a participation activity.
- Percent of the participants from a specific geographic area.
- Number and percent of participants providing feedback in languages other than English (identify number of respondents by language).
- Number and percent of responses received to a survey or questionnaire.
- Number of webpage downloads occurring during a specific time period.
- Number and percent of participants signed up to receive web, phone, or mail-based communications as a result of a participation activity.
- Number and percent of contacts updated (on a monthly or quarterly basis) to ensure participants continue receiving notices and announcements.
- Number and percent of participants expressing satisfaction regarding the process or results of a participation activity.

Other Methods

Community partners may be able to help BART identify baseline information and other data to help determine additional performance measurement methods. It is also

important to ask community meeting participants how they heard about the meeting so as to determine how best to target outreach efforts.

B. Public Participation Outcomes

After each public participation strategy implementation, community members have expressed an expectation and preference that BART share what it has learned from the community, and how it took that information into account. BART should be able to demonstrate to the community that it has considered and explored the direction recommended by the public and taken that into account as part of its overall analysis. BART should explain its rationale when, for example, a highly popular suggestion was not implemented because it was found to be technically unfeasible or cost-prohibitive. BART staff and Directors need to report back on the results of the analysis for methods for which public input was sought.

C. Conclusion

The BART Public Participation Plan is intended to be a living document that will be informed by current and future practices, successes and lessons learned. BART could continue to adapt and modify its public participation practices and language assistance services over time.

The more than 1,000 community members who gave so graciously of their time during the last few months told us that not only must BART do a better job of reaching out, but we must also better define the services that we already have.

Through this process of asking the community to help us to create the most effective Public Participation Plan possible, we have learned that building bridges and trust among people who have historically felt excluded from real institutional decision-making is a journey that will take time and a redoubled commitment from all of the staff at BART.

Appendix VIII: BART Fatalities and Collisions Table

Fatalities/Collisions on BART
2013-2015

BART does not make a determination as to whether an incident is a suicide or accident; the coroners in each locality make that determination. The coroners are also responsible for identifying the victims. That information is not included in BART's records. Instances of collisions that do not result in death are recorded but no record is kept of the nature of the injuries or subsequent status of the person involved. Note: October 2013 employee deaths not included because we know it was not a suicide incident

Date	Location	Fatality/Collision
2/27/2013	Glen Park	Fatality
4/3/2013	12th Street	Fatality
4/22/2013	24th Street	Near Collision with Person (no injury)
6/18/2013	West Oakland	Fatality
6/18/2013	Hayward	Fatality
11/12/2013	El Cerrito Del Norte	Fatality
2014		
1/12/2014	Downtown Berkeley	Collison with Person
1/26/2014	Embarcadero	Collision with Person
3/4/2014	South of South Hayward	Fatality
3/11/2014	Balboa Park	Fatality
4/14/2014	Montgomery	Collision with Person
5/15/2014	Pleasant Hill	Fatality
5/30/2014	West Oakland	Fatality
7/4/2014	Richmond	Fatality
9/9/2014	Bay Fair	Collision with Person
11/3/2014	Between Concord and North Concord	Fatality
11/6/2014	San Leandro	Fatality
11/8/2014	North Berkeley	Collision with Person
11/25/2014	Downtown Berkeley	Fatality
11/25/2014	Embarcadero	Collision with Person
2015		
1/1/2015	El Cerrito Plaza	Near Collision with Person (no injury)
1/14/2015	Powell Street	Fatality
3/16/2015	Civic Center	Fatality
3/22/2015	Balboa Park	Fatality
3/31/2015	Richmond	Fatality
4/1/2015	El Cerrito Plaza	Fatality
	Launched Suicide Prevention 4/14/15	
4/16/2015	Civic Center	Fatality
5/29/2015	Powell	Fatality

6/24/2015	West Dublin/Pleasanton	Fatality
8/24/15	Embarcadero	Fatality
9/8/15	12th Street	Fatality
9/28/15	Ashby	Fatality
10/13/15	San Bruno	Fatality
12/20/15	Downtown Berkeley	Collison with Person
2016		
1/19/16	North Berkeley (north of station)	Fatality
3/5/16	Hayward	Fatality (died at hospital)
3/26/16	Downtown Berkeley	Fatality
	Ticket backs delivered to stations beginning of May	
5/19/16	On tracks between Hayward and South Hayward	Collison with Person
5/23/16	Embarcadero	Collison with Person
9/9/16	16th ST/Mission	Fatality
2017		
1/4/17	24 St/Mission	*BPD reports this was an accident based on accounts. Fatality (person died at hospital)
1/14/17	Ashby	Collison with person
2/7/17	On tracks near El Cerrito del Norte MP 10.92 R Line	Fatality
2/24/17	MacArthur	Collison with person
4/13/17	San Bruno	Collison with person
8/24/17	Bay Fair	Fatality
10/14/17	24th Street Mission	Collision with person
11/19/17	Montgomery	Collision with person
11/30/17	Balboa	Fatality
12/16//17	Powell	Fatality
2018		
2/25/18	North Concord/Martinez	Collision with person
3/8/18	MacArthur	Fatality
6/18/18	A15 Spur Track	Fatality
10/29/18	Balboa	Collision with person
12/10/18	L15	Fatality
2019		
3/31/19	19 Street	Collision with person
4/8/19	El Cerrito Del Norte	Fatality
4/22/19	Rockridge	Fatality
6/6/19	Embarcadero	Collision with person
6/25/19	Union City	Fatality
7/24/19	Lake Merritt	Collision with person
7/30/19	24th Street Mission	Collision with person
8/7/19	Montgomery	Collision with person
8/18/19	Powell	Fatality

9/11/19	Bay Fair	Collision with person
9/12/19	24th Street Mission	Fatality
9/15/19	Balboa	Collision with person
9/19/19	Powell	Fatality
10/28/19	South Hayward	Collision with person
12/31/19	Castro Valley	Fatality

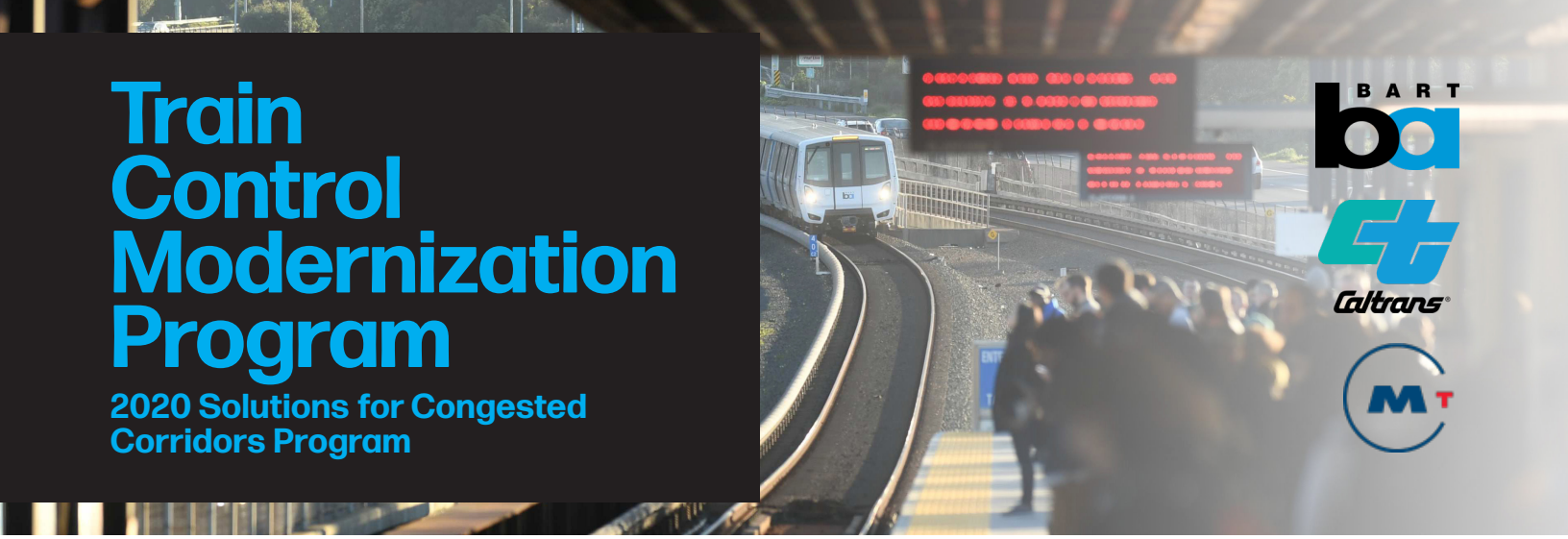
*I didn't include 3/6/16 incident at MacArthur-Ashby because no one was struck by a train. Someone was on trackway but no collision. Person was held for psychiatric evaluation.

*1/22/17 Homeless male, possibly intoxicated, falls into Powell trackway but goes under lip of platform. No collision with train no injuries.

*2/9/17 Hayward – Fire Dept. confirms female wasn't hit by train, fell off platform. Sent for Psychiatric Evaluation.

Train Control Modernization Program

2020 Solutions for Congested Corridors Program



BART's Train Control Modernization Program (TCMP) will enable BART to increase the number of trains operating through the Bay Area's Transbay Tube. Long-term ridership trends at BART require additional capacity, which has long been recognized across the region. The TCMP will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

BART will replace the existing train control systems with a new train control system, as well as update the train control power cables and interlock cables within existing right-of-way, allowing BART to achieve shorter headways on the trunk line between Daly City and Downtown Oakland.

BART's TCMP will:

Shorten headways

Increase reliability and reduce delays

Replace aging infrastructure

TCMP Benefits

Relieve Crowding: Onboard capacity will increase significantly.

Increase Reliability: System delays attributable to the old train control system will be reduced.

Increase Average Weekday Ridership and Reduce VMT on Bay Area Roadways: Greater capacity and higher reliability will grow ridership.

Reduce GHG Emissions: Reduction in VMT leads to reduction in GHG emissions.

Sustainable Communities: Additional transit capacity will support station area community growth.

TCMP Schedule

Environmental Process complete	September 2017
30% Design complete	December 2017
Begin Construction Phase	2021
Begin increased service through Transbay Tube	2028

TCMP Cost Estimate

The TCMP is estimated to cost approximately $1.14 billion. This Solutions for Congested Corridors Program grant proposal is for the final $60 million needed to fully fund BART's TCMP through the Bay Area's Transbay Tube and the downtown Oakland segment. This funding would leverage more than $1 billion in local, State and Federal funding, including funding from BART's Measure RR passed in 2016, California's Transit and Intercity Rail Capital Program (TIRCP), and a $1.169 billion Federal Transit Administration Capital Investment Grant, of which $397 million is programed for TCMP.

Train Control Modernization Program

2020 Solutions for Congested Corridors Program

Submitted by:
San Francisco Bay Area Rapid Transit District
California Department of Transportation
Metropolitan Transportation Commission

Application Date:
July 2020

Table of Contents

Table of Figures

Table of Tables

Caltrans | METROPOLITAN TRANSPORTATION COMMISSION | BART

Mr. Mitch Weiss
Executive Director
California Transportation Commission
1120 N Street, MS-52
Sacramento, CA 95814

Re: BART Train Control Modernization Program for Congested Corridors Program Submittal

Dear Mr. Weiss:

The California Department of Transportation (Caltrans), the Metropolitan Transportation Commission (MTC), and the San Francisco Bay Area Rapid Transit District (BART) are pleased to submit this application for the BART Train Control Modernization Program (project) in San Francisco and Alameda Counties under the Senate Bill 1 (SB 1) Solutions for Congested Corridors Program (SCCP). The request is for $60 million in SCCP funding. BART will be the implementing agency with co-sponsorship from Caltrans and MTC. Any cost overruns above the allocated amounts for the project will be covered by BART, with no additional funding from the SCCP.

The project focuses on the Transbay Corridor and will replace the existing train control systems with a new communications-based train control system, as well as updating train control power cables and interlock cables within existing right-of-way. This will allow BART to achieve shorter headways on the trunk line between Daly City and Downtown Oakland. The project is included in BART's Hybrid Summary Comprehensive Multimodal Corridor Plan, which was created in accordance with the California Transportation Commission (CTC) Solutions for Congested Corridors Program guidelines and is also included in the Regional Transportation Plan, *Plan Bay Area 2040*. The Environmental Process and 30% Design phases were completed in 2017 and the Construction phase is slated to begin in 2021.

The project is part of a wide-ranging program of BART projects that will increase capacity, relieve congestion and crowding, increase transit ridership, and decrease greenhouse gas (GHG) emissions and vehicle miles traveled (VMT) by increasing the frequency and capacity of trains operating through the BART Transbay Tube. The project will increase the number of trains operating through the Transbay Tube during the peak period from 23 to 28 per hour. This, along with BART's new vehicle procurement, will enable peak

hour train lengths to be increased from an average of 8.9 cars to 10, which will maximize throughput capacity in the most congested travel corridor in the San Francisco Bay Area. Alongside the increase of corridor capacity is the complete replacement of BART's aging and obsolete equipment with a communications-based system that will allow trains to run closer together safely. With the new equipment, BART will be able to provide reliable, consistent, and safe transit services for San Francisco Bay Area residents that will result in less environmental impact and better connections to other transit services in the region.

We greatly appreciate the California Transportation Commission's (CTC) consideration of the requested investment in this project, as it is a critical component of the transportation infrastructure for the most congested corridor in the Northern California Megaregion. We believe the project is a strong candidate for SB 1 SCCP funding.

The signatures below confirm support from Caltrans, MTC, and BART, and the undersigned hereby submit for CTC's consideration the application and the Project Programming Request forms, including the project description, funding profile, and completion dates.

Sincerely,

TOKS OMISHAKIN
Director
California Department of Transportation

7-16-2020
Date

TONY TAVARES
District Director
California Department of Transportation
District 4

6-30-2020
Date

THERESE W. MCMILLAN
Executive Director
Metropolitan Transportation Commission

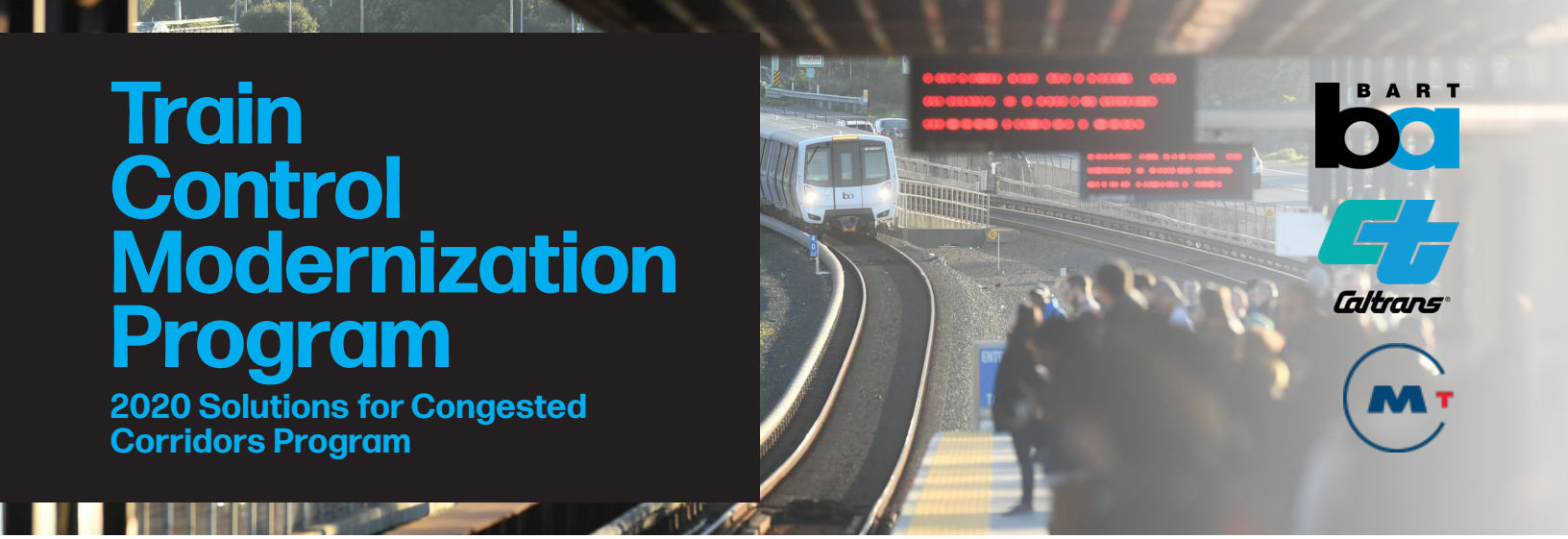
6/29/2020
Date

ROBERT POWERS
General Manager
San Francisco Bay Area Rapid Transit District

17 JUNE 2020
Date

Train Control Modernization Program

2020 Solutions for Congested Corridors Program



BART's Train Control Modernization Program (TCMP) will enable BART to increase the number of trains operating through the Bay Area's Transbay Tube. Long-term ridership trends at BART require additional capacity, which has long been recognized across the region. The TCMP will enable BART to operate trains with the shorter headways necessary to deliver more trains per hour and keep the Bay Area moving.

BART will replace the existing train control systems with a new train control system, as well as update the train control power cables and interlock cables within existing right-of-way, allowing BART to achieve shorter headways on the trunk line between Daly City and Downtown Oakland.

BART's TCMP will:

Shorten headways

Increase reliability and reduce delays

Replace aging infrastructure

TCMP Benefits

Relieve Crowding: Onboard capacity will increase significantly.

Increase Reliability: System delays attributable to the old train control system will be reduced.

Increase Average Weekday Ridership and Reduce VMT on Bay Area Roadways: Greater capacity and higher reliability will grow ridership.

Reduce GHG Emissions: Reduction in VMT leads to reduction in GHG emissions.

Sustainable Communities: Additional transit capacity will support station area community growth.

TCMP Schedule

Environmental Process complete	September 2017
30% Design complete	December 2017
Begin Construction Phase	2021
Begin increased service through Transbay Tube	2028

TCMP Cost Estimate

The TCMP is estimated to cost approximately $1.14 billion. This Solutions for Congested Corridors Program grant proposal is for the final $60 million needed to fully fund BART's TCMP through the Bay Area's Transbay Tube and the downtown Oakland segment. This funding would leverage more than $1 billion in local, State and Federal funding, including funding from BART's Measure RR passed in 2016, California's Transit and Intercity Rail Capital Program (TIRCP), and a $1.169 billion Federal Transit Administration Capital Investment Grant, of which $397 million is programed for TCMP.

C. GENERAL INFORMATION

C1. Project Overview

California Department of Transportation (Caltrans) is submitting this application to the 2020 Solutions for Congested Corridors Program (SCCP) in cooperation with the Metropolitan Transportation Commission (MTC) and the San Francisco Bay Area Rapid Transit District (BART) for **BART's Train Control Modernization Program (TCMP).**

This grant proposal is for $60 million in 2020 SCCP funds to fully fund BART's Train Control Modernization Program through the Bay Area's Transbay Corridor, the most congested portion of BART's system, connecting Oakland and San Francisco.

The TCMP will replace the existing train control systems with a new communications-based train control (CBTC) system, allowing BART to achieve the shorter headways needed to operate an increased number of regularly scheduled trains per hour on the trunk line between Daly City, downtown San Francisco, and Downtown Oakland. The new CBTC system will be based on a moving-block signaling approach throughout the existing system. The new CBTC system will be installed within or adjacent to the existing BART trackway and wayside facilities. Existing signaling equipment will be overlaid with the most current electronics, software, computer systems, and cabling.

Figure 1. CBTC through Transbay Corridor

The overall TCMP will install new raceway, power, and communication cables, new Switch Power Supply Cabinets (SPSC), conduit, and breakers at various locations throughout the BART system. New zone controllers, interlocking controllers and wayside radio transponder tags will be installed throughout the trackside alignment, train control rooms and central control facilities. Cars and maintenance vehicles will be outfitted with processor-based controllers, transponders, communication equipment and location sensors.

Installation activities will include trenching for new cabling, concrete pads for electronic equipment along the trackway, as well as new racks, communication equipment and cable trays within the wayside train control rooms and central control facilities. These activities will take place within existing BART right-of-way.

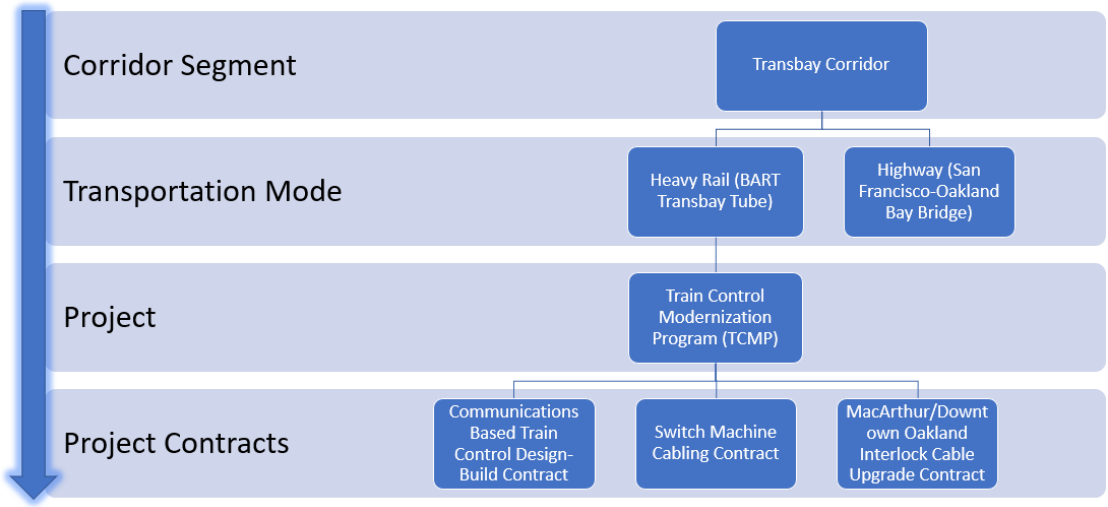
The estimated cost for BART's TCMP is approximately $1.14 billion. Matching funds will be provided by a variety of sources, including BART's Measure RR (a $3.5 billion general obligation measure passed by voters in November 2016), BART's capital allocations (operating funds transferred to support BART's capital program), a Federal Transit Administration Capital Investment Grant, and other state grant funds. The current request of $60 million in SCCP funds will fully fund the TCMP through the Transbay Corridor and enable the benefits presented in this application. The TCMP includes three contracts for implementation through the Transbay Corridor, all with independent utility. These contracts include:

- CBTC Design-Build Contract,
- Switch Machine Cabling Contract,
- MacArthur/Downtown Oakland Interlock Cable Upgrade Contract

Consistency with CTC Guidelines

While the TCMP will be implemented through the BART system, 2020 SCCP funds will be used to fully fund the TCMP through the Transbay Corridor (project segment). Per CTC's guidelines, the Transbay Corridor is considered a project segment because of the size of the overall project. With SCCP funding, the Transbay Corridor segment of the TCMP project will be fully funded. As detailed throughout this application, the segment has independent utility and benefits from implementation will relieve congestion, increase ridership, reduce greenhouse gas emissions, and decrease safety incidents in the corridor and throughout the entire region. BART's TCMP contracting strategy through the Transbay Corridor can be seen in Figure 2 below. The Transbay Corridor segment has independent utility as a segment of the entire BART system because the new train control system will be brought into use after implementation is complete in this segment. This will enable the more frequent train service to commence upon completion of the segment. The Transbay Corridor segment contains the most complicated junctions and the most heavily-used operating environments on the BART system.

Figure 2. BART's TCMP Contracting Strategy through the Transbay Corridor



2020 SCCP funds will be used to fully fund the Switch Machine Cabling and MacArthur/Downtown Oakland Interlock Cable Upgrade Contracts. Both contracts have independent utility for the operation of switches, interlockings, and other track equipment directly after installation and will result in increased reliability benefits as soon as they are implemented. The CBTC Design-Build contract, will be completed after the two cabling contracts and will benefit from the implementation of the earlier contracts but will also have independent utility, and be brought into service upon completion of installation and testing. Additionally, the TCMP contracts that will receive SCCP funding will be ready to start construction by December 31, 2023. BART will install the TCMP on other segments of the BART system following completion of the Transbay Corridor segment, but the improvements in the Transbay Corridor to achieve 28 trains per hour do not depend on those other segments being completed.

A Hybrid Summary Comprehensive Multimodal Corridor Plan (HSCMCP) has been developed and submitted with this application detailing the Transbay Corridor and the TCMP's importance as a priority project in current planning documents. This Hybrid Corridor Plan can be found on the BART TCCCP website.

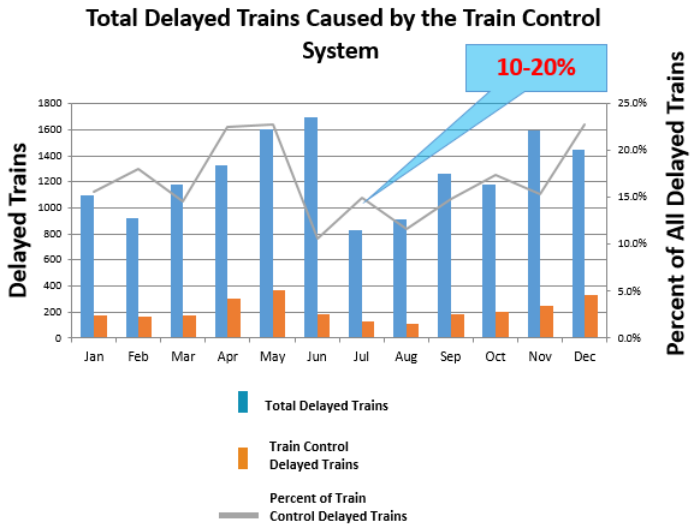
C2. Project Background

BART's Transbay Corridor Core Capacity Program (TCCCP) is a comprehensive program of projects that will increase capacity, relieve congestion and crowding, increase transit ridership, and decrease greenhouse gas (GHG) emissions and vehicle miles traveled (VMT) by increasing the frequency and capacity of trains operating on the Transbay Corridor and the entire BART system. The TCCCP will allow the number of trains operating through the Transbay Corridor to increase from 23 to 28 per hour, and peak hour train lengths to be increased from an average of 8.9 cars to 10, maximizing throughput capacity in the most heavily used and most congested travel corridor in the San Francisco Bay Area. BART's Transbay Corridor TCCCP has four major project components:

1. Train Control Modernization Program (TCMP)
2. New rail cars;
3. Additional vehicle storage at BART's Hayward Maintenance Complex (HMC); and
4. Six new traction power substations.

With this 2020 SCCP application, BART is requesting $60 million to fully fund the TCMP through the Transbay Corridor and Transbay Tube. The TCMP is the linchpin of BART's TCCCP and is key to expanding capacity as well as enhancing system reliability and safety. In 2017, between 10 and 20 percent of all delayed trains were caused by problems with the existing train control system, which is over 45 years old (See Figure 3). BART is proposing to completely replace its aging and obsolete equipment with a communications-based system which will allow trains to run closer together safely, thereby increasing system capacity. This new system is a fully-tested and operational system and is used all over the world including New York, London, Paris, Hong Kong and Denmark.

Figure 3. Total Delayed Trains Caused by the Train Control System, 2017



The four program elements of the TCCCP will allow BART to decrease headways on each of the five BART lines from 15 to 12 minutes, thus increasing frequency by up to 25 percent. Expansion of the rail car fleet will allow for BART to put into operation additional trains of 10 cars, creating additional capacity in the system. Decreased headways and increased capacity result in an estimated increased average weekday ridership of 202,972 BART riders beyond current levels (starting in 2037) and will decrease GHG emissions by at least 3.3 million metric tons of carbon dioxide equivalent ($MTCO_2e$) over a 20-year period.[1]

C3. Purpose and Need Statement

Ranked by population, the Bay Area is the fourth largest metropolitan area in the United States.[2] In 2010, the nine-county region was home to more than 7.6 million people and 3.7 million jobs. Some 300,000 jobs are in San Francisco's central business district alone, the fourth largest central business district in the country.[3] The Bay Area's economy is healthy and growing, driven in part by the technology sector that is vital to growing the nation's overall

[1] Ridership projections are included in Appendix V and GHG projects are included in the benefit-cost analysis.
[2] http://www.vitalsigns.mtc.ca.gov/population
[3] As of 2010, American Community Survey 2006-2010

economy. Downtown San Francisco is undergoing large construction projects that will increase office space and enable the city to add more jobs. By 2040, the region expects 9.5 million residents and 4.7 million jobs to be located here.[4]

This rapid growth is reflected in the increased levels of congestion on Bay Area freeways. In September 2017, the Metropolitan Transportation Commission (MTC) released its yearly analysis of Bay Area freeway congestion. The analysis showed that congestion-related delays during weekday commute periods climbed 9 percent, from 3.2 minutes per commuter in 2015 to a record average of 3.5 minutes in 2016. MTC defines "congested delay" as the time spent in traffic moving at speeds of less than 35mph. The top two most congested freeway segments in the Bay Area both feed into the highly congested Transbay Corridor across the Bay Bridge. Topping the list is afternoon peak period travel northbound and eastbound on US Highway 101 and Interstate 80 from the Interstate 280 interchange in San Francisco to the Bay Bridge's Yerba Buena Island Tunnel. Number two on the list is westbound Interstate 80 from State Route 4 in Hercules to Fremont Street in San Francisco. Congested conditions on this segment span most of the day from 5:25am to 6:55pm.

As the Bay Area's second largest transit network, BART currently operates and maintains 48 stations and 122 miles of revenue track, serving over 440,000 passengers every weekday in the counties of Alameda, Contra Costa, San Francisco, and San Mateo.[5] The Transbay Corridor is the only connection between many East Bay residential areas and jobs in San Francisco. It is the region's most heavily used transportation link, carrying more than 40,000 trips per hour in the peak, two-thirds of which are made on BART's two tracks crossing under the Bay. Virtually all the remaining trips are in cars and buses that utilize the heavily congested San Francisco-Oakland Bay Bridge (Interstate 80).

Figure 4. Average Square Feet per BART passenger on the System

On the main trunk of the BART system, from the Oakland Wye (junction in downtown Oakland where trains of all routes merge) through the Transbay Tube to Daly City, BART currently operates a maximum of 23 trains per hour in each direction. Train lengths vary, but currently average 8.9 cars per train in the peak. Between the East Bay and San Francisco, peak hour trains are crowded, and ridership has been growing. The system is expanding as the San Francisco Core continues to attract development, and with an extension into Santa Clara County that opened on June 13, 2020, tens of thousands of new riders are expected in the coming years.

[4] Plan Bay Area 2040, http://2040.planbayarea.org/sites/default/files/2017-07/Regional%20Forecast%20Supplemental%20%20Report_Final_7-2017_0.pdf

[5] https://www.bart.gov/sites/default/files/docs/Role%20of%20BART%20in%20Region%20-%20Final%20Web%20Oct%202016_1.pdf

BART's existing Transbay Corridor ridership exceeds capacity in the peak between the Embarcadero station in San Francisco and the Downtown Berkeley, Rockridge, and Bay Fair stations in the East Bay. Within this corridor, riders in the peak hour currently have an average of 5.2 square feet of space each, which is an uncomfortable level for passengers (Figure 4). The Transit Capacity and Quality of Service Manual published through the Transit Cooperative Research Program (TCRP) establishes 5.4 square feet of space per passenger as a comfortable loading level on U.S. rail transit systems. [6] The Federal Transit Administration (FTA) has adopted this as the threshold level of crowding for funding Core Capacity projects with Capital Investment Grant funds.

The most crowded part of the BART corridor is the five-mile-long Transbay Tube between the Embarcadero and West Oakland stations, where the average rider has just 4.7 square feet of space during the morning peak, far less than the FTA threshold. Current BART riders endure uncomfortably crowded conditions, while some commuters choose other modes to avoid the crush-load conditions on some BART trains. BART's ability to increase ridership – and the region's ability to steer growth to places served by transit – depend upon additional BART capacity in the Transbay Corridor.

The Train Control Modernization Program will reduce congestion throughout the Transbay Corridor, and more specifically the Transbay Tube, by replacing the existing and outdated train control systems with a new communications-based train control system, associated power cables, and train control raceways. These upgrades to the 45-year old train control system will reduce the headways between BART trains, increase train lengths, and allow the agency to operate more regularly scheduled trains per hour.

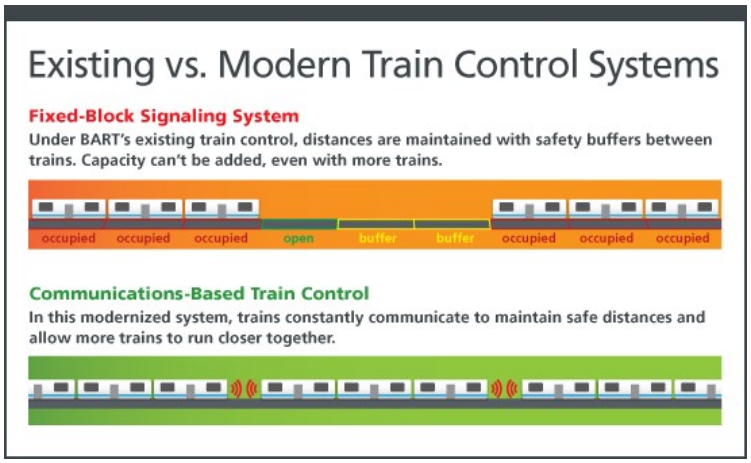
C4. Project Scope

BART will replace the existing train control systems with a new communications-based train control system, allowing BART to achieve the shorter headways needed to operate more regularly scheduled trains per hour on the trunk line, through the Transbay Tube, and between Daly City and the Oakland Wye. The Oakland Wye is the segment of the BART network between the West Oakland Station, the 12th Street/City Center Station and the Lake Merritt Station, where trains coming from the Richmond, Pittsburg/Bay Point, Dublin/Pleasanton and Warm Springs lines converge before traveling in the westbound direction through the Transbay Tube to San Francisco and Daly City.

BART will install new surface mounted train control raceways and associated cables to new Switch Power Supply Cabinets (SPSC) and associated interlock switches in 26 locations. This portion of the TCMP also includes installation of new conduit, power cable, and new breakers between Station House Power to Train Control rooms in 22 locations. The TCMP also includes installation of raceway, power, and communication cables from the MacArthur Train Control Room to wayside Interlock Switches for multiple locations.

[6] TCRP Report 165

Figure 5. Comparison of Existing vs. Modern Train Control Systems



The new CBTC system will be based on a moving-block signaling approach throughout the existing system. The new CBTC system will be installed within or adjacent to the existing BART trackway and wayside facilities. Existing signaling equipment will be overlaid with the most current electronics, software, computer systems, and cabling. New zone controllers, interlocking controllers and wayside radio transponder tags will be installed throughout the trackside alignment, train control rooms and central control facilities. Cars and maintenance vehicles will be outfitted with processor-based controllers, transponders, communication equipment and location sensors.

Installation activities for the CBTC system will include trenching for new cabling, concrete pads for electronic equipment along the trackway, as well as new racks, servers, computers, communication equipment and cable trays within the wayside train control rooms and central control facilities. This replacement of over 45-year-old equipment will further improve reliability of the system. These activities will take place within existing BART right-of-way.

C5. Project Benefits

BART's implementation of the TCMP furthers the following five objectives of the Solutions for Congested Corridor Program as described in the following sections of this application:

- ***Reducing Congestion:*** the proposed improvement will relieve congestion in the Transbay Corridor
- ***Safety:*** address safety issues and concerns in the corridor by reducing VMT, including health impacts from reduced GHG emission
- ***Economic Development:*** supports economic development and access to employment
- ***Air Quality and Greenhouse Gases:*** reduce greenhouse gas emissions and criteria pollutants and advance the State's air quality and climate goals
- ***Efficient Land Use:*** supports transportation-efficient land use principles including policies that support transit-oriented development

For detailed description of these and other benefits, see Section E. Evaluation Criteria and Appendix II. Performance Indicators and Measures.

C6. Project Location

The TCMP will add much needed capacity and congestion relief to the Transbay Corridor, which includes the highly congested Bay Bridge (Interstate 80) which carries car, truck, and transit traffic, as well as the Transbay Tube which carries BART trains. In addition to the Interstate 80 corridor, the BART system also provides a capacity relief alternative to the U.S. Route 101, State Route 24 and Interstate 880 corridors.

See Project Corridor Section and Figure 7 below for a map of the BART system and the Transbay Corridor (outlined by a dotted orange line), as well as more information on project location.

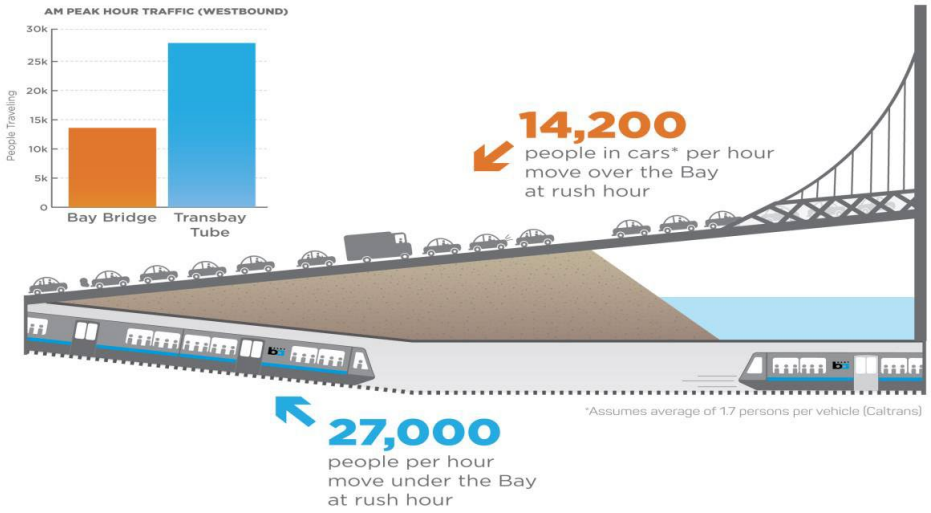
C7. Project Priority

Caltrans priority 2 of 10

C8. Project Corridor

The Transbay Corridor is the only connection between many East Bay residential areas and jobs in San Francisco. It is the region's most heavily used transportation link, carrying more than 40,000 trips per hour in the peak, two-thirds of which are made on BART's two tracks crossing under the Bay. Virtually all the remaining trips are in cars and buses that utilize the heavily congested San Francisco-Oakland Bay Bridge (Interstate 80).

Figure 6. BART's Peak Hour Transbay Market Share

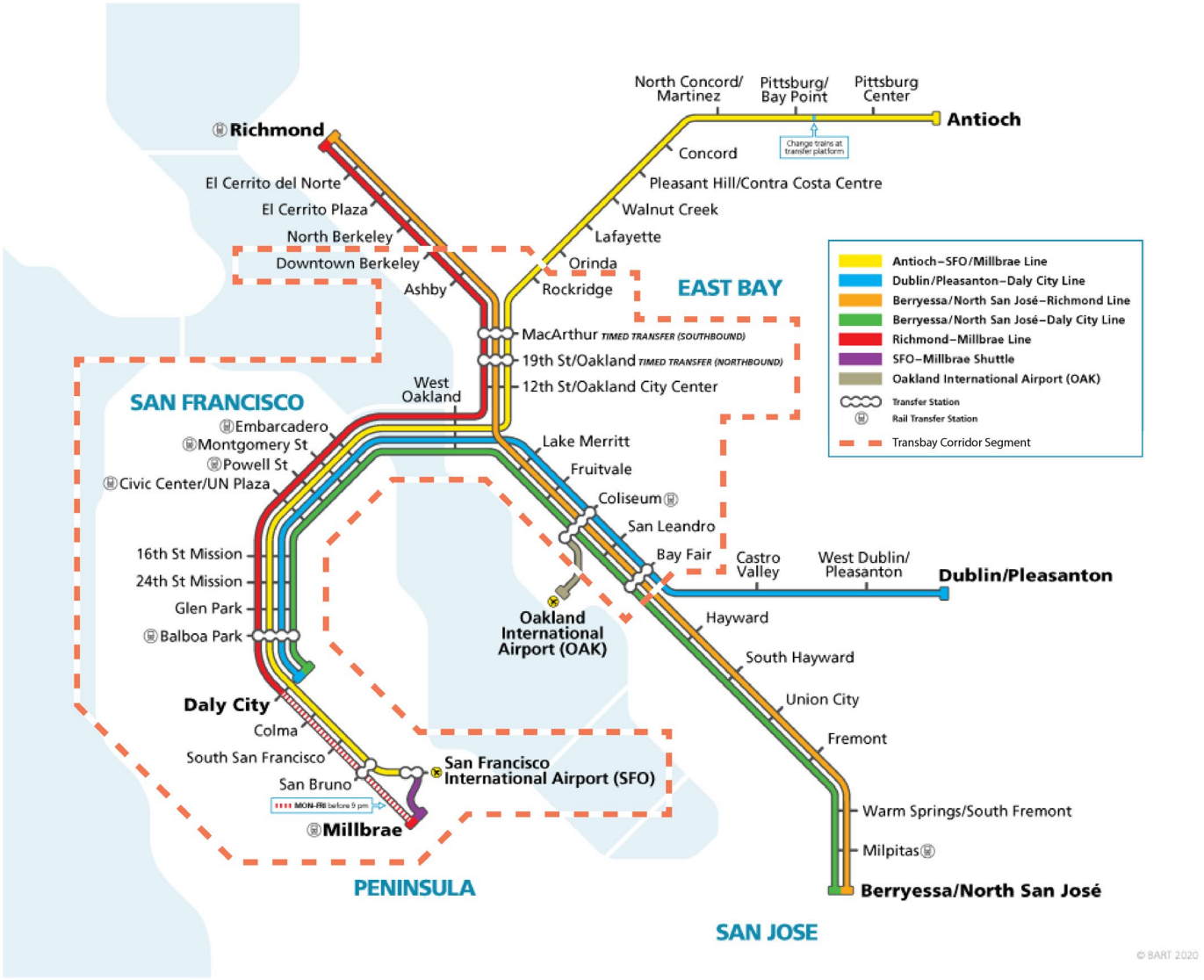


On the main trunk of the BART system, from the Oakland Wye (junction in downtown Oakland where trains of all routes merge) through the Transbay Tube to Daly City, BART currently operates a maximum of 23 trains per hour in each direction. Train lengths vary, but currently average 8.9 cars per train in the peak. Between the East Bay and San Francisco, peak hour trains are crowded, and ridership has been growing. As the system expands – with a recently-completed extension into Santa Clara County and a recent eastern Contra Costa opening – and as the core continues to attract development, tens of thousands of new riders are expected.

This SCCP application includes implementation of the TCMP through the Transbay Corridor (segment). Figure 7 shows a map of the current BART system with the Transbay Corridor segment outline by a dotted orange line. This segment has independent utility in that once TCMP is implemented through this segment, BART will be able to achieve the benefits of increasing from a maximum of 23 trains per hour to 28 trains per hour service through the Transbay Corridor. Beyond this project segment (outside the scope of this grant application), BART will implement TCMP throughout the remaining corridors of the BART system and will then be able to operate up to 30 trains per hour through the Transbay Tube.

As noted previously, a Hybrid Summary Comprehensive Multimodal Corridor Plan was developed per CTC guidelines for this SCCP application.

Figure 7: BART System Map, Transbay Corridor Segment Outlined



C9. Project Consideration for Reversible Lanes

Section is not applicable.

C10. Project Consistency with Regional Transportation Plan & Sustainable Communities Strategy

The Metropolitan Transportation Commission (MTC) adopted an update to its Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Plan Bay Area 2040, on July 26, 2017. The update includes the capital projects and service assumptions that make up the Transbay Corridor Core Capacity Program. Hence, the TCCCP and the TCMP are consistent with the Bay Area's RTP/SCS (Plan Bay Area 2040).

C11. Anticipated Impact of the Safer Affordable Fuel-Efficient Vehicles (SAFE) Rule on Project

Caltrans anticipates no impact on the TCMP project from the Safer Affordance Fuel-Efficient Vehicles Rule.

D. SCREENING CRITERIA

D1. Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS)

As stated previously, The Metropolitan Transportation Commission (MTC) MTC adopted an update to its Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Plan Bay Area 2040, on July 26, 2017. The update includes the capital projects and service assumptions that make up the Transbay Corridor Core Capacity Program. Hence, the TCCCP is consistent with the Bay Area's Sustainable Communities Strategy RTP/SCS.

Figure 8: Plan Bay Area 2040 Goals

Goal		Target*	
	Climate Protection	1	Reduce per-capita CO_2 emissions
	Adequate Housing	2	House the region's population
	Healthy and Safe Communities	3	Reduce adverse health impacts
	Open Space and Agricultural Preservation	4	Direct development within urban footprint
	Equitable Access	5	Decrease share of lower-income households' budgets spent on housing and transportation
		6	Increase share of affordable housing
		7	Do not increase share of households at risk of displacement
	Economic Vitality	8	Increase share of jobs accessible in congested conditions
		9	Increase jobs in middle-wage industries
		10	Reduce per-capita delay on freight network
	Transportation System Effectiveness	11	Increase non-auto mode share
		12	Reduce vehicle operating and maintenance costs due to pavement conditions
		13	Reduce per-rider transit delay due to aged infrastructure

* Complete target language as adopted by the Commission and ABAG Executive Board can be found at: http://planbayarea.org/the-plan/plan-details/goals-and-targets. Target language shown above is summarized for brevity.

Environment Equity Economy

The TCCCP and the TCMP meet the goals of Plan Bay Area in specific and measurable ways, including:

- Reduction of CO2 emissions (Climate Protection)
- Reduce adverse health impacts (Healthy and Safe Communities)
- Increase share of jobs accessible in congested conditions (Economic Vitality)
- Increase non-auto mode share (Transportation System Effectiveness)
- Reduce vehicle O&M costs due to pavement conditions (Transportation System Effectiveness)

Beyond these connections to the TCCCP and TCMP, BART is also committed to the following goals through their Transit Oriented Development guidelines, as discussed more in this application:

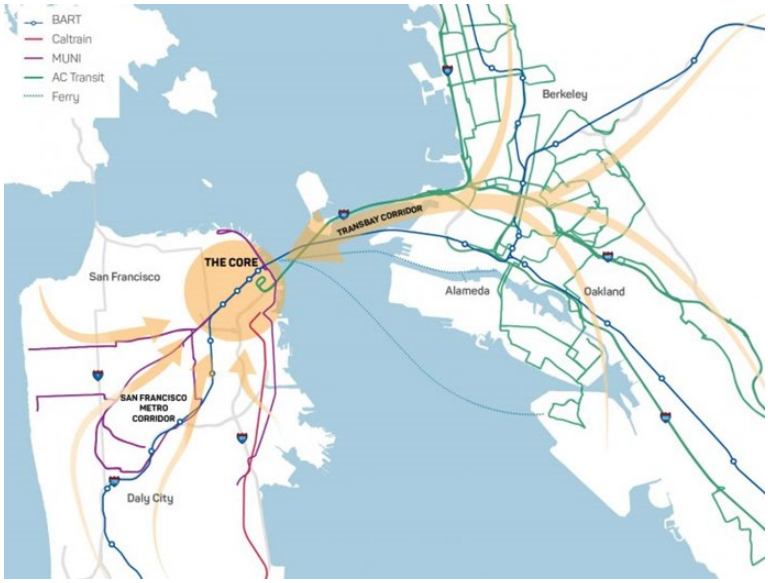
- House the region's population (Adequate Housing)
- Direct development within urban footprint (Open Space and Agricultural Preservation)
- Increase share of affordable housing (Equitable Access)

D2. Corridor Plan

The California Transportation Commission's (CTC's) 2018 Comprehensive Multimodal Corridor Plan guidelines, in recognition of the length of time needed to complete a comprehensive multimodal plan, have allowed agencies to conduct an integrated analysis of existing plans within a corridor, also known as a "Hybrid Plan" to define the corridor. Streets and Highways Code 2391 requires that Solutions for Congested Corridors Program (SCCP) funding "be

available for projects that make specific performance improvements and are part of a comprehensive corridor plan designed to reduce congestion in highly traveled corridors by providing more transportation choices for residents, commuters, and visitors to the area of the corridor while preserving the character of the local community and creating opportunities for neighborhood enhancement projects."

Figure 9. MTC's Bay Area Core Capacity Transit Study Area



BART, as a part of the agency's SCCP funding application for the TCMP, has created a Hybrid Plan, bringing together the Bay Area Core Capacity Transit Study and the Horizon Crossings Perspective Paper. In both plans, the TCMP is described as a priority program, one that is necessary to increase the capacity of BART trains in order to meet the growing demand within the Transbay Corridor. The plan begins with an overview of the Transbay Corridor's capacity needs as well as current and future demand. The TCMP, the lynchpin of BART's Transbay Corridor Core Capacity Program, has been identified by BART as a method to increase capacity through the Transbay Corridor and the BART system. Both the Bay Area Core Capacity Transit Study (BACCTS), which focuses on short- and medium-term investments, and Crossings paper, which focuses on long-term investments and needs, highlight the necessity of the TCMP as a cost-effective investment to increase transit capacity through the Transbay Corridor.

The Hybrid Plan summarizes the guiding principles, multimodal considerations and impacts, community and stakeholder engagement, and consistency with other planning activities at each level of government for both component plans. For the short- and medium-term, the focus of the BACCTS is on increasing transit capacity and reliability by implementing the TCMP and adding new rail cars to the BART system, while also expanding bus and ferry routes. In the long-term, the focus is on increasing transit capacity and ridership through a new BART Transbay crossing. Both studies anticipate large impacts on demand, and the ability to meet future demand if the right capacity investments are taken. Finally, the outcomes and recommended investments of both studies is discussed.

This Transbay Corridor Hybrid Summary Comprehensive Multimodal Plan is located on BART's TCCCP website.

D3. Environmental and Community Impacts

BART, as a recipient of federal funds, is required by the Federal Transit Authority (FTA) to comply with Title VI of the Civil Rights Act of 1964 and its amendments (Act). Title VI of the Civil Rights Act of 1964 requires that no person in the United States, on the grounds of race, color or national original be excluded from, be denied the benefits of, or be subjected to discrimination, under any program or activity receiving federal financial assistance. Presidential Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" addresses environmental justice in minority and low-income populations. Presidential Executive Order 13166 "Improving Access to Services for Persons with Limited English Proficiency" addresses services to those individuals with Limited English Proficiency (LEP).

FTA Circular 4702.1B, dated October 1, 2012, entitled *Title VI Requirements and Guidelines for Federal Transit Administration Recipients* (Title VI Circular) and FTA Circular 4703.1, dated August 15, 2012, entitled *Environmental Justice Policy Guidance for Federal Transit Administration Recipients* (EJ Circular), require that federal funding recipients, such as BART, review its transportation decisions to ensure equity in the transportation decision making process and to ensure that decisions are not made on the basis of race, color, national origin or socioeconomic status.

The existing BART system covers large portions of the Bay Area and bisects several communities, including designated minority and low-income populations. The TCMP equipment in operation will not make any noise, and it will be largely invisible to the public. The TCMP equipment will be entirely in existing transportation right-of-way and existing structures. No impacts from installation or operation of TCMP equipment are anticipated. Therefore, no disproportionately high and adverse effects are anticipated for any surrounding communities, including Title VI/EJ communities.

Per page 11 of the final categorical exclusion for the entire TCCCP, the TCMP has no physical features which will lead to environmental impacts.

The TCMP has categorical exclusion (CE) for NEPA and statutory exemption (SE) for CEQA. These documents are available on BART's TCCCP website.

E. EVALUATION CRITERIA

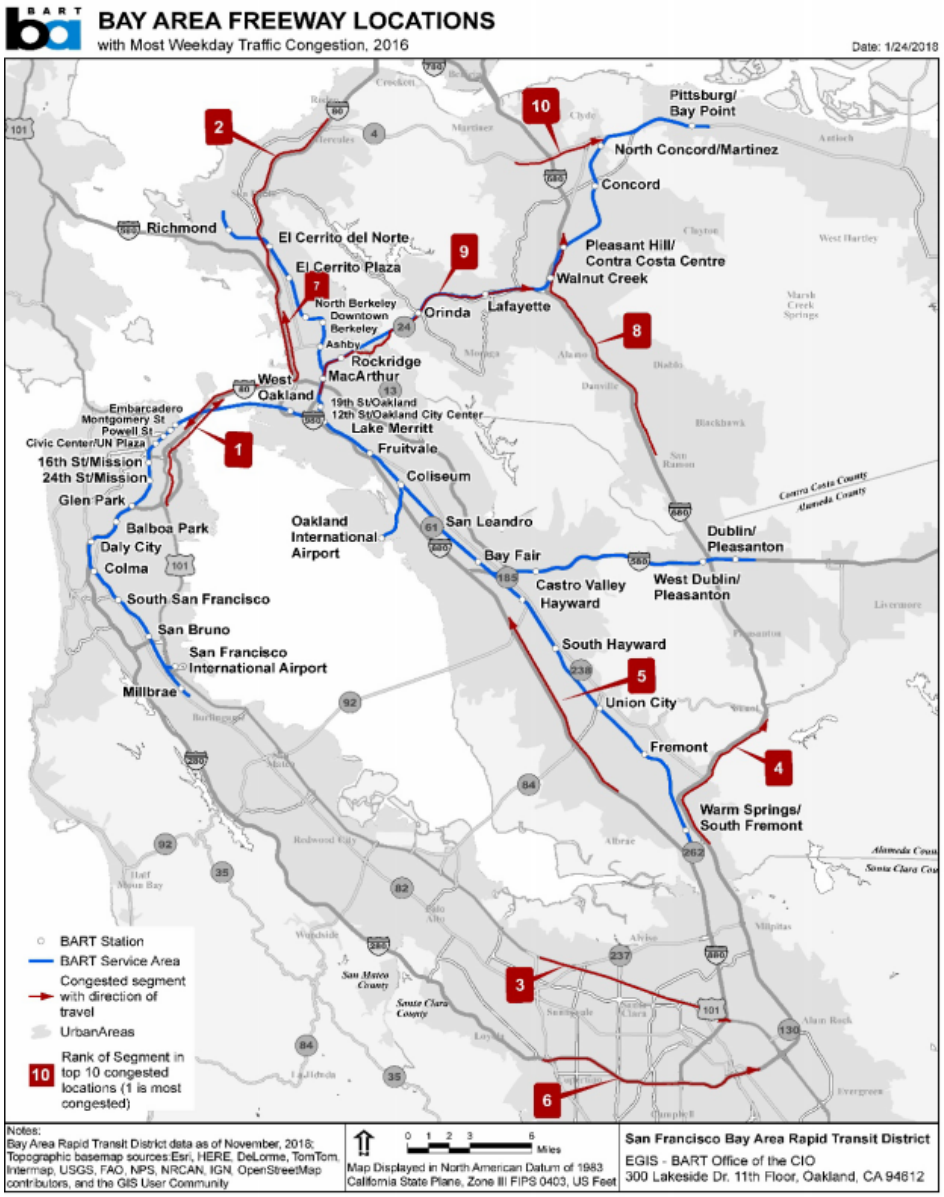
E1. Primary Evaluation Criteria: Congestion

The TCCCP will address the issue of congestion in the highly traveled, highly congested Transbay Corridor, and multiple state highway corridors that feed into the Transbay Corridor. The program meets the Solutions Congested Corridors Program objectives of reducing delay in the corridor, increasing person throughput, expanding mode choices, improving reliability, and reducing vehicle miles traveled by offering expanded transit capacity as an alternative to congested roadways.

Current Corridor Congestion

The Transbay Corridor is the most congested freeway corridor in the Bay Area. The Metropolitan Transportation Commission (MTC) defines "congested delay" as the time spent in traffic moving at speeds of less than 35mph. According to this metric, the freeway segment with the most delay in the entire Bay Area is afternoon peak period traffic on northbound and eastbound U.S. 101 and Interstate 80 (I-80), leaving San Francisco across the Bay Bridge. The freeway segment with the second highest amount of delay is travel along westbound I-80 across the Bay Bridge into San Francisco. Congested conditions along this segment span from 5:25am to 6:55pm. It is the only segment among the region's 10 most congested corridors to include a morning commute and is also the only segment to not have a mid-day break in congested conditions.

Figure 10. Bay Area Freeway Locations with Most Traffic Congestion, 2016



BART Congestion

BART's Transbay Corridor ridership exceeds capacity in the peak between the Embarcadero station in San Francisco and the Downtown Berkeley, Rockridge, and Bay Fair stations in the East Bay. Within this corridor, riders in the peak hour have an average of 5.2 square feet of space each, which is an uncomfortable level for passengers. The Transit Capacity and Quality of Service Manual published through the TCRP establishes 5.4 square feet of space per passenger as a comfortable loading level on U.S. rail transit systems. [7] The Federal Transit Administration (FTA) has adopted this as the threshold level of crowding for funding Core Capacity projects with Capital Investment Grant funds.

The most crowded part of the BART corridor is the five-mile-long Transbay Tube between the Embarcadero and West Oakland stations, where the average rider has just 4.7 square feet of space, far less than the FTA threshold. Current BART riders endure uncomfortably crowded conditions, while some commuters choose other modes to avoid the

[7] TCRP Report 165

crush-load conditions on some BART trains. BART's ability to increase ridership – and the region's ability to steer growth to places served by transit – depend upon additional BART capacity in the Transbay Corridor.

The Transbay Corridor is also the most congested segment of the BART system (see Figure 4). Train crowding conditions during peak periods on this corridor are extreme. Errors in BART's aging train control system are a major cause of train delay. BART's existing train control system was not built to handle BART's current ridership demands. The current system can safely accommodate no more than one train every 2.5 minutes. The new train control system would allow trains to safely run closer together, which will decrease delays and is needed in order to run more frequent service between Oakland and San Francisco. Overall, the TCMP will reduce the risk of severe or recurrent delays for the system's growing number of riders.

Impacts of Existing Condition

According to BART operations data, there were 647 delay events in 2017 that were caused by issues with the train control – accounting for a total of 41,050 minutes (684 hours) of delay. Considering the average train load for each one of these delayed trains, the person minutes of delay in 2017 related to train control issues was nearly 8.7 million minutes, or 144,700 total person hours of delay. The TCMP will drastically reduce the amount of delays related to train control, thus saving thousands of hours of person delay per year, benefiting riders and the overall economy of the region.

Table 1. BART Delay Events, 2017

Month	Events	Minutes of Delay	Average Train Load (riders)	Person Minutes of Delay
January 2017	51	2,949	200	592,296
February 2017	48	5,261	218	1,149,969
March 2017	51	2,383	215	512,796
April 2017	57	2,717	211	573,660
May 2017	56	2,340	214	502,038
June 2017	63	2,190	214	470,456
July 2017	48	2,027	211	427,946
August 2017	48	6,197	214	1,330,199
September 2017	68	3,571	217	776,219
October 2017	67	3,050	216	660,999
November 2017	36	3,147	209	660,725
December 2017	54	5,218	196	1,023,292
2017 Total	647 Events	41,050 Total Minutes of Delay		8,680,600 Person Minutes of Delay

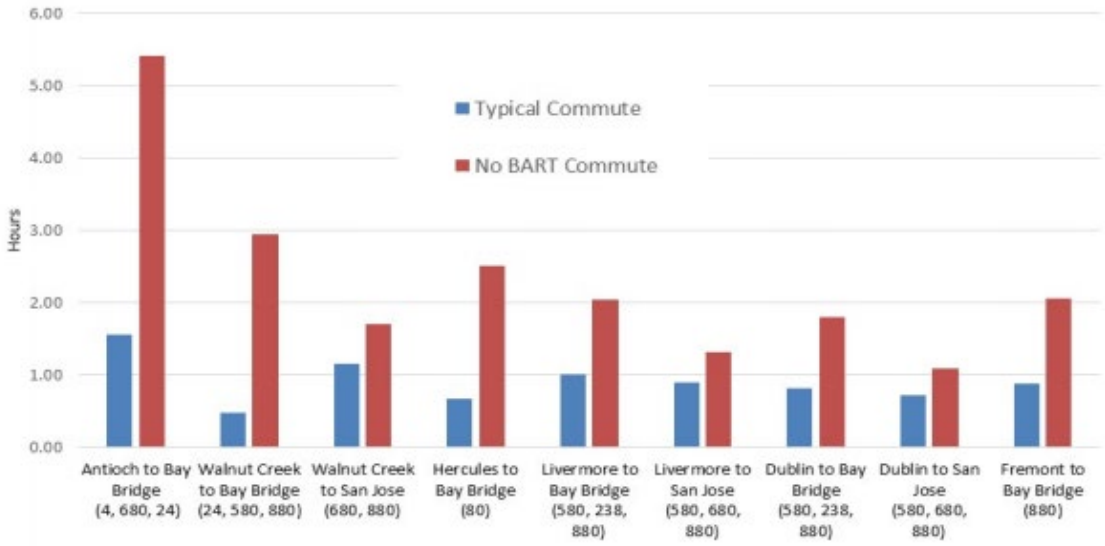
No-Build Environment

Freeway Corridor Impacts

As seen in Figure 10, the BART system parallels many freeway corridors throughout the Bay Area including I-80, U.S. 101, I-580, I-680, I-880, and SR-24. Without BART, freeway congestion would be even worse. An analysis was conducted to evaluate the impact of BART on freeway travel time and congestion using the MTC travel demand model. Figure 11 shows the results of this analysis. The chart shows typical commute times for various travel corridors throughout the Bay Area under conditions both with and without BART. Without BART, travel times per segment would increase between 25 and 500 percent and between 20 minutes to three and a half hours. This analysis

demonstrates that BART is a vital component to the Bay Area transportation network and is critical to addressing issues of delay and congestion throughout the region.

Figure 11. Travel Time Changes, Current and without BART



Source: Cambridge Systematics, 2016. Estimates developed using the MTC travel demand model 2010 base year with and without BART and adjusted to match 2016 conditions. Assumes all BART riders would drive on parallel freeways if BART were not available. Assumes 50% of Bay Bridge users would use other bridges or stay home.

On the BART System, without increased capacity from the TCMP and overall TCCCP implementation, ridership will stay constant, not allowing for needed growth on the system.

Other Corridor Improvements

Replacement of the eastern span of the San Francisco-Oakland Bay Bridge (SFOBB) was completed in 2013, which included replacing the seismically unsound portion of the Bay Bridge with a new self-anchored suspension bridge and viaducts. Additionally, BART is currently completing the Transbay Tube Internal Retrofit Project, which involves installation of a steel liner inside the tube and the installation of a new water pump system.

Other highway-focused improvements planned for the SFOBB corridor include Bay Bridge Forward, which will increase person throughout through completing HOV improvements, transit core improvements, and shared mobility services by investing $40 million in One Bay Area Grant (OBAG) 2 funds to address these capacity constraints.

BART is currently in the early planning stages for building a Second Crossing within the Transbay Corridor. However, this project is not expected to begin construction for years. The Transbay Corridor needs additional capacity in the short term, capacity that the TCMP implementation will provide.

Impact of Not Completing Corridor

As described in the sections above, the following impacts will be seen if the TCMP is not implemented in the Transbay Tube:

- BART ridership in the Transbay Tube will stagnate, as additional system capacity will not be realized from increased frequencies and train lengths.
- Significant delays due to the current train control system will continue, making it harder for riders to rely on the BART system.

- Current drivers on the San Francisco – Oakland Bay Bridge may not be attracted to choose BART for some Transbay trips.
- Current BART riders through the Transbay Tube may choose to drive the San Francisco – Oakland Bay Bridge due to crowded conditions on BART, adding to the congestion already seen at peak periods.
- Economic growth in the corridor may not meet projections due to capacity limitations on BART.

Other Corridor Issues

The Transbay Corridor's major issue is congestion, both on the San Francisco – Oakland Bay Bridge and through the BART Transbay Tube. Congestion further exacerbates other existing issues in the corridor such as safety, air quality, and quality of life. From 2014 to 2019 (past 5 years), nearly 3,000 traffic crashes resulting in fatalities, injuries, or property damage were reported on the Bay Bridge alone. Every year, hundreds of lives are tragically lost on our region's highways, arterials and local streets. Compared to these roadway conditions, BART is a drastically safer travel option. In 2016, BART experienced only 4.5 station incidents per million patrons and 0.9 vehicle incidents per million patrons.[8] With almost 270,000 vehicles traveling on the Bay Bridge every day, the Transbay Corridor significantly adds to the pollution and greenhouse gas emissions of the Bay Area, affecting the health and well-being of many at risk groups. Other than the health issues, congestion in the Transbay Corridor reduces the quality of life for residents in the area by significantly increasing the time spent traveling to employment and recreational centers throughout the region.

Proposed Solution

As discussed previously, the Transbay Corridor Core Capacity Program includes four elements:

- The Train Control Modernization Program (TCMP), which will allow trains to be spaced more closely together, reducing headways. (2020 SCCP Scope and lynchpin of the TCCCP)
- Acquisition of new rail cars, allowing for increased capacity per train.
- Construction of a new railcar storage yard at Hayward Maintenance Complex Phase 2, which will create storage yard capacity for 250 rail cars.
- Six new traction power substations, supplementing BART's existing traction power in those places where there is not enough power to operate the additional capacity.

The TCCCP will relieve current levels of crowding during the peak while creating the opportunity for ridership growth. The TCMP will increase headways and allow trains running through the Transbay Corridor to be 10 car trains. Based on current ridership, the space per passenger in the corridor will be increased from the current average of 5.2 square feet to a more comfortable 7.6 square feet. This additional space will allow for ridership growth on the BART system, as well as reduce congestion on the San Francisco – Oakland Bay Bridge.

Incorporation of Multiple Modes

The transit mode share on the Transbay Corridor is the highest in the Bay Area, particularly during peak periods. Seventy-five percent of morning peak hour trips in the corridor are on transit, which includes BART, AC Transit buses, and WETA ferries. BART carries most of these trips. Two-thirds of all peak hour trips in the corridor are on BART (see Figure 6). The TCCCP will further increase BART capacity, shifting an even larger share of peak period travel to transit.

BART provides the backbone transit system throughout the Bay Area. Every BART station provides local bus connections, with some BART stations providing major intermodal transit connections to a substantial number of

[8] BART Fiscal Year 2017 Short Range Transit Plan and Capital Improvement Program

other transit services such as Caltrain, MUNI light rail and bus, AC Transit, SamTrans, Golden Gate Transit, ACE commuter rail, WETA ferries, and bus services to and from Solano and Napa counties.

Because the Core Capacity Program is expected to increase ridership throughout the system, it will have a positive impact on the ridership numbers of connecting transit services. As part of the ridership modeling included in this application, combined ridership on multiple Bay Area transit systems will increase by 65,800 riders annually because of the Core Capacity Program.

The ridership changes from other Bay Area transit systems, because of the Core Capacity Program, were projected based on the Metropolitan Transportation Commission's (MTC's) Travel Model One forecast. Travel Model One is an Activity Based Model (ABM) covering the nine-county San Francisco Bay Area, which is used to simulate travelers' reactions to transportation projects and policies in the region, as well as to quantify the impact of cumulative individual decisions on the Bay Area's transportation networks.

For a detailed methodology and results of this Ridership Analysis, see Appendix V.

Minimize VMT, Maximize Throughput

The TCMP is expected to increase ridership on the BART system by increasing service frequency and allowing increased train lengths (with additional cars) throughout the BART system and specifically the Transbay Corridor**.** The ridership methodology described in Appendix V details how the following increases in ridership were developed, as well as constraints on ridership increases. Because the full Core Capacity Program is estimated to be completed in 2030 (rather than 2028 for the Transbay Corridor TCMP segment) the ridership benefits described below will begin to accrue even earlier than the ridership modeling estimates, meaning the ridership benefits described in this application are considered conservative.

To predict ridership growth, the June 2016 level of 435,973 riders per day was established as the constrained baseline.

Table 2. Capacity Constrained Weekday Ridership Increase

Program Milestone	Date	Weekday Capacity Constrained Ridership	BART Ridership Growth from Program
Base Ridership – At Capacity	2016	435,973	
Core Capacity Complete	2030		
Year 1 of Core Capacity Implemented	2031	587,145	151,172
Year Final of Core Capacity Implemented (20 years per Cal B/C)	2050	638,945	202,972

Completion of the Core Capacity Program will allow BART to increase the peak hour capacity through Transbay Corridor by 45 percent during the peak period. Assuming current ridership trends continue, the capacity constrained ridership after the completion of the Core Capacity Program will be about 45 percent higher than the current capacity constrained ridership. This leads to an average weekday systemwide capacity constrained ridership of 638,945 with the Core Capacity Program. This is an increase of 202,972 average weekday riders due to increased capacity alone. Under the most likely ridership increase scenario, which is based on increased frequency, shown in Appendix V. Ridership Modeling and Methodology, this 638,945-capacity limit is expected to be reached in 2037.

Based on this ridership increase on the BART system, the Cal B/C model used to estimate benefits for this SCCP application shows that these ridership increases will reduce regional VMT by an average of 535 million miles per year. **Over the 20-year life of the project, this equates to over 10 billion vehicle miles reduced as result of the Core Capacity Program.**

Balanced Solution

As discussed in future sections of this SCCP application, implementation of the TCMP will balance multiple benefits, including:

- Increased capacity through the Transbay Corridor, allowing for increased BART ridership
- Reduced VMT on Bay Area Highways from increased BART ridership
- Decreased GHG emissions stemming from decreased VMT
- More reliable connections to economic centers, like downtown San Francisco and downtown Oakland, that spurs community development along BART corridor, focused on transit-oriented development (TOD)

Benefits of Solution

As discussed previously, the TCMP will provide several benefits for the Transbay Corridor including reducing congestion on the BART line, reducing VMT on Bay Area Highways by providing a reliable alternative mode of transportation with BART, decreasing GHG emissions from reduced VMT, increased reliability, and economic and community development that arises from more reliable and less congested transportation. Additionally, because the TCMP is a train control project, it will have very little impact on the existing lived environment, providing an excellent, low-impact, short-term solution to easing congestion in the Transbay Corridor.

Other Considerations

As discussed above, MTC and other agencies including BART are evaluating the potential for another Transbay Crossing, including a second Transbay Tube. However, this solution is decades in the making, with time horizons extending as far as 2080. Consequently, there are limited options available to Caltrans and BART to increase capacity in the multi-modal Transbay Corridor. The TCCCP, and specifically the TCMP, was studied and determined to be the only short-term solution to increasing capacity.

E2. Secondary Evaluation Criteria

The TCMP will provide safety, accessibility, economic, air quality, and land use in the project corridor and throughout the bay area region.

Safety

BART's existing train control system, originally built over 45 years ago, is reaching the end of its useful life. The new train control system implemented through the TCMP will be a proven technology, ensuring that BART can operate more trains closer together, while maintaining the highest level of safety in train operation. Many systems worldwide have now converted to CBTC, such as the London Underground, the Paris Metro, portions of the New York City subway, and others, and BART will be following this path using fully tested and certified technology.

From 2014 to 2019 (past 5 years), nearly 3,000 traffic crashes resulting in fatalities, injuries, or property damage were reported on the Bay Bridge alone. Fortunately, less than 1% (8) of these crashes resulted in fatalities. However, every year, hundreds of lives are tragically lost on our region's highways, arterials and local streets. Compared to these roadway conditions, BART is a drastically safer travel option. In 2016, BART experienced only 4.5 station incidents per

million patrons and 0.9 vehicle incidents per million patrons.[9] Station incidents and vehicle incidents are all incidents that meet the FTA criteria as "reportable" (mostly injuries and illnesses) and occur either in BART station areas or on BART train cars.

Table 3. Accidents Reported on Bay Bridge, 2014 – 2019

Accident Types	Crashes
Fatal Crashes	8
Injury Crashes	1,049
Property Damage Only Crashes	1,927
TOTAL	2,984

For a list of BART Fatalities/Collisions from 2013 to 2019, please see Appendix VIII of this application.

Increased Safety

It is estimated that the implementation of TCMP through the Transbay Corridor will lead to over 10 billion VMT reduced over 20 years. This reduction in VMT will also reduce the amount of vehicle crashes, as fewer miles will be traveled on Bay Area roadways. Table 4 shows the immense safety and economic effects that the Transbay Corridor Core Capacity Program will have on the surrounding roadways over 20 years.

Table 4. Vehicle Crash Reduction, 20-year analysis

Accident Types	Avoided Crashes
Fatal Crashes	64.3
Injury Crashes	3,105.5
Property Damage Only Crashes	5,889.8
TOTAL	9,060

The benefit cost-analysis completed as part of this application shows that this reduction in safety incidents will yield an itemized benefit of $550 million over the 20-year analysis.

Other Safety Measures

Implementation of the overall TCCCP will also improve safety on BART platforms. During evening peak periods, the platforms at the Embarcadero and Montgomery stations in downtown San Francisco often become extremely crowded, particularly when there is a service disruption. Extreme crowding on the platforms can lead to unsafe conditions when people are too close to the platform edge. The TCMP will enable more frequent trains, which will help to relieve crowding and improve safety on BART platforms.

Accessibility

The TCMP will increase accessibility to multimodal choices by enhancing the reliability of the BART system. As described previously, the BART system (specifically in the Transbay Tube) suffers from reliability issues because of the current train control system. Implementation of the TCMP will allow riders to better rely on BART to get them to their destinations with more certainty on timing; making work, education, retail, and other trips easier on the BART system.

[9] BART Fiscal Year 2017 Short Range Transit Plan and Capital Improvement Program

Access to Multimodal Choices

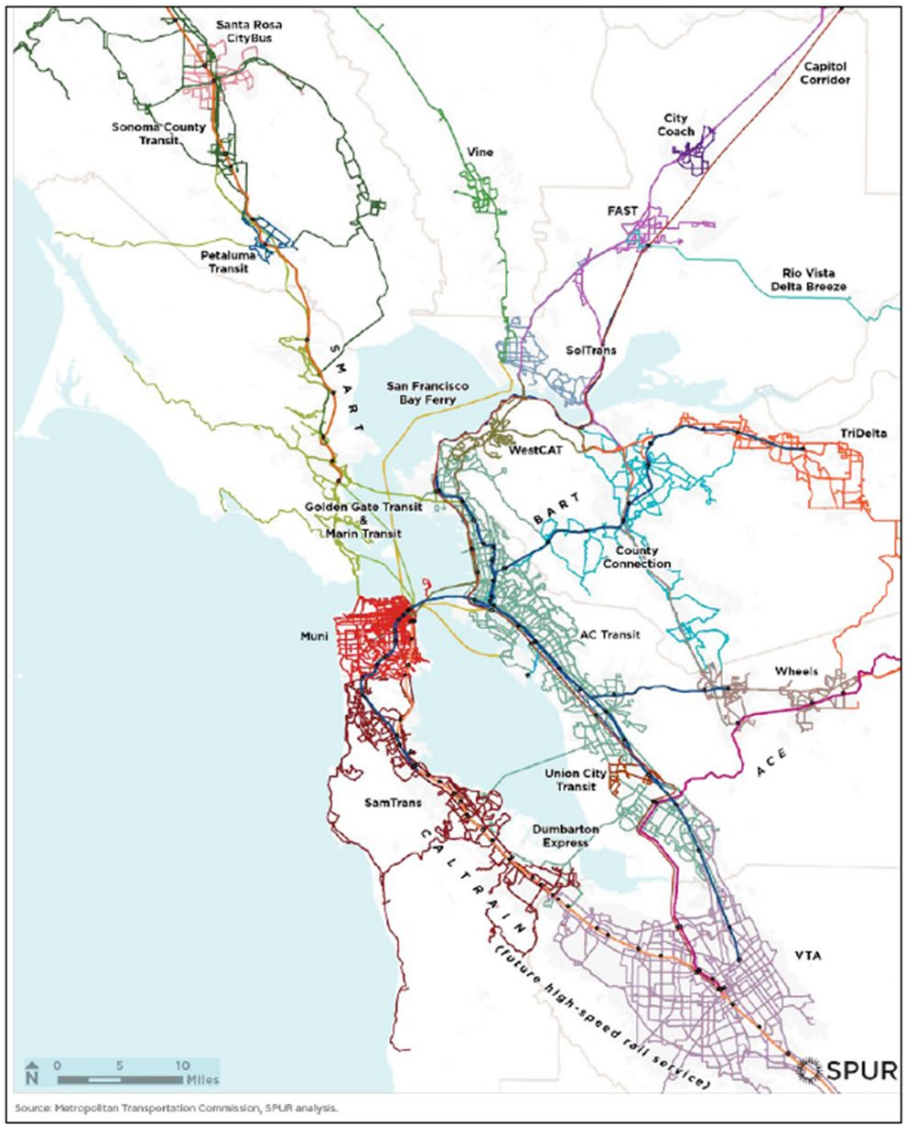
BART provides the backbone transit system throughout the core of the Bay Area. Every BART station provides local bus connections, with some BART stations providing major intermodal transit connections to a substantial number of other transit services such as Caltrain, MUNI light rail and bus, AC Transit, SamTrans, Golden Gate Transit, ACE commuter rail, WETA ferries, and bus services to and from Solano and Napa counties.

Capitol Corridor, which provides rail service from the Sacramento Valley to San Jose, connects with BART at both the Richmond and Coliseum stations, and in 2017, over 160,000 riders transferred between systems at these two stations. The Richmond BART station also provides connections to Amtrak's San Joaquin and California Zephyr services. In addition, BART provides direct service to both the San Francisco and the Oakland International Airports. Over 125 private and publicly funded shuttle services – from medical, university, senior center, employment and high-tech services – provide rides to and from BART stations throughout the system, and many BART riders increasingly rely on the emerging Transportation Network Companies (TNCs) such as Uber and Lyft for "last mile" trips.

BART and 21 other Bay Area transit systems use the regional the Clipper Card fare collection system, facilitating transfers from one system to another. From August 2018 to August 2019, a monthly average of nearly 30 percent of all BART's riders transferred to another Bay Area operator from BART. Looking at Clipper usage data from this time period, BART can identify riders that use their Clipper Card on more than one transit system in a regular month. Of the 21 transit operators that were using Clipper at that time, all services that connect with BART have riders that use Clipper on both systems. For the major transit operators that connect to BART, 29 percent of AC Transit riders, 20 percent of SF MUNI riders, 12 percent of Caltrain riders, and 22 percent of SamTrans riders transferred to BART in a regular month.

Transit agencies that are either currently connected to the BART system or have plans for integration will benefit from growth in BART capacity possible by implementing the TCMP, as BART provides its passengers with connections to destinations throughout the Bay Area.

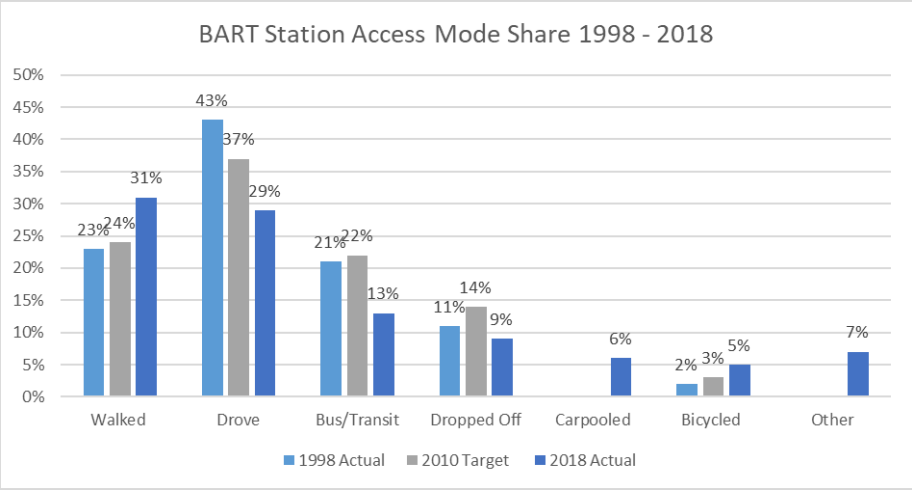
Figure 12. BART Connections in Bay Area



Gap Closure

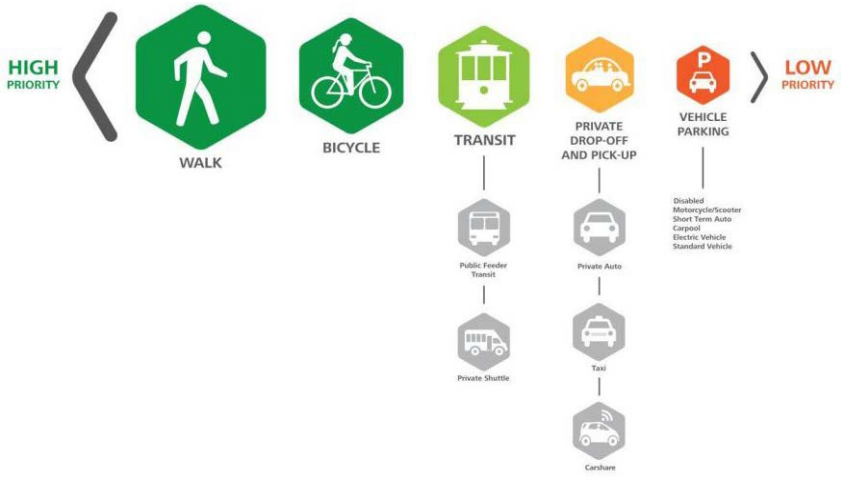
BART proactively supports projects and programs that encourage and support riders to access the BART system by walking and bicycling. BART regularly uses existing revenues and grant funds to improve pedestrian walkways, lighting and signage, and to provide secure bicycle parking at or near its stations. In 2018, over 35 percent of BART riders accessed stations by bicycling and walking (Figure 13). By leading to increased ridership, the TCMP and overall TCCCP will likely result in a proportional increase in bicycling/walking trips to BART stations.

Figure 13. BART Station Access Mode Share[10]



To encourage alternative access modes, BART has revised its Station Access Policy, which prioritizes investments to improve active transportation mode share and safety. With a clear focus on improved access, BART anticipates that the percentage of riders who use active transportation to reach BART will be even greater in the future. Figure 14 depicts BART's station access investment priorities, with walking and bicycling receiving the highest investments of all access types.

Figure 14. BART Station Access Investments Priorities



In addition, the newly designed train cars include bicycle storage areas, making it easier for riders to get to their destinations by bicycle once they have arrived at their stop. This improvement will help facilitate growth in bicycle station access.

Connectivity

As the Bay Area region has recovered from the Great Recession, the technology industry and related sectors have driven rapid and significant growth. Between 2010 and 2014 alone, San Francisco employment grew 25%, surpassing the projections from the last regional transportation plan, Plan Bay Area 2040. About a quarter of all workers in downtown San Francisco and Oakland use BART for their daily commute. As a major connection mode to job centers throughout the Bay Area, investments in BART's capacity capabilities will serve the thousands of workers using the system to access employment, recreational, and housing centers throughout the region. See the Regional Competitiveness section below for information on how the project will continue to support connection to jobs, major destinations, and residential areas throughout the Bay Area.

[10] 2018 data per 2018 BART Customer Satisfaction Study

Economic Development and Job Creation and Retention

Regional Competitiveness

BART supports the Bay Area's growing economy. Hundreds of thousands of commute trips are made on BART every weekday, saving commuters time and money, and connecting businesses with a larger pool of workers. Commuters traveling into San Francisco save on average 30 minutes each direction compared to driving. Commuters traveling to downtown Oakland save 7 minutes on average compared to driving and those traveling to Pleasant Hill save 30 minutes on average.[11] These travel time benefits help support the region's major economic centers by connecting businesses with the workers they need. About a quarter of all workers in downtown San Francisco and Oakland use BART for their daily commute. BART makes 12 percent more workers available within an hour commute of Downtown San Francisco and 28 percent more within an hour commute of the West Dublin/Pleasanton station.[12] Without investments in BART capacity to serve these important travel markets, the Bay Area's economic competitiveness would suffer. Many new jobs would go to regions that enjoy shorter travel times and less crowding.

Because of the value BART provides, the land around BART stations sells and leases at a substantial premium, increasing property tax revenue to local government. At the same time, the money that the region invests in building and maintaining BART is reinvested in the Bay Area economy, further contributing to growth. Over the next 25 years, BART is expected to take on an even larger role in the Bay Area's economy by helping to accommodate the region's growth.

Movement of Goods and Services

According to the San Francisco Bay Area Goods Movement Plan, traffic congestion is a prominent issue to the movement of goods in the Bay Area. Truck delays increase the cost of goods movement, as well as increased truck emissions. As described earlier in the Congestion Section, the TCMP will result in significant VMT reductions (over 10 billion over 20 years) which corresponds to less drivers utilizing the Transbay Corridor, allowing for better movement of trucks over the Bay Bridge.

Job Creation

BART's TCMP will result in direct jobs being created both at BART and for consultant staff. Based on staffing plans for TCMP, from 2021 through 2029, over 500 new positions will be created to build the system, with the jobs being located at BART headquarters, the Pittsburg, CA facility, and other locations internationally. Additionally, based the Caltrans Executive Factbook economic multiplier of 11 jobs per $1 million investment, the over TCMP will result in other 12,540 direct and indirect jobs supported.

Bombardier, the Canadian company under contract to complete the initial 775 cars that are BART's "Fleet of the Future" has opened a new facility in Pittsburg, California to complete this order, as well as future work in California and the west coast. This move by Bombardier, because of the large contract with BART for rail vehicles, will create economic opportunities for the Bay Area region by rehabbing an existing manufacturing facility and then staffing the facility. Bombardier currently has nearly 500 employees in California, working on projects beyond the current BART order of 775 vehicles. Bombardier employees are operating and maintaining the AirTrain system at San Francisco International Airport, maintaining the commuter rail car fleet for the Metrolink service at the Southern California Regional Rail Authority, and operating and maintaining the Coaster and Sprinter rail services for the North County

[11] 2014 BART Customer Satisfaction Study, https://www.bart.gov/sites/default/files/docs/CustSat2014Report_Final.pdf
[12] Economic Impacts of BART Operations, ALH Urban & Regional Economics, September 2015

Transit District. Bombardier is also in the early stages of bringing a new automated people mover system to Los Angeles International Airport.[13] Bombardier's presence in the region will only grow with this additional investment in the assembly plant. It has been reported that about 50 people currently work at the plant and expect that number to rise to about 115 as the plant ramps up. Bombardier's decision to locate this new manufacturing facility in the Bay Area is only possible with BART's large contract.

Air Quality and Greenhouse Gas Reductions

Included in the Cal B/C model conducted as part of this SCCP application, a GHG analysis was conducted in conjunction with the ridership analysis discussed above.

Table 5 summarizes the lifetime GHG reductions, which were quantified assuming a 20-year analysis, per Cal B/C guidance. These substantial GHG reductions are derived from the increased ridership that will be spurred from the increased capacity resulting in implementation of the TCMP. This increased ridership will mean that VMT will be reduced on the region's highways (as discussed previously) leading to fewer cars and less congestion on Bay Area roads.

Table 5. GHG Reduction Cal B/C Model Results

Emission Reductions	Total over 20 Years (tons)	Average Annual (tons)	Value over 20 years ($ million)	Average Annual Value ($ million)
CO Emissions Saved	12,029.34	601.47	$ 0.47	$ 0.02
CO_2 Emissions Saved	3,330,494.57	166,524.73	$ 87.32	$ 4.37
NO_X Emissions Saved	607.02	30.35	$ 5.83	$ 0.29
PM_{10} Emissions Saved	2.65	0.13	$ 0.24	$ 0.01
$PM_{2.5}$ Emissions Saved	16.44	0.82		
SO_X Emissions Saved	32.91	1.65	$ 1.19	$ 0.06
VOC Emissions Saved	496.76	24.84	$ 0.33	$ 0.02
Total	**3,343,679.69**	**167,183.98**	**$ 95.37**	**$ 4.77**

Based on the total GHG reductions over 20 years, the following equivalencies are shown for the TCCCP[14]:

- Over 380 million gallons of gasoline
- Over 3.7 billion pounds of coal
- Nearly 390 thousand homes' energy use for 1 year
- Over 7.8 million barrels of oil

Additionally, GHG reductions from the TCCCP is equivalent to carbon sequestered by:

- Over 55.8 million seedlings grown for 10 years
- Over 4.4 million acres of US forests in one year

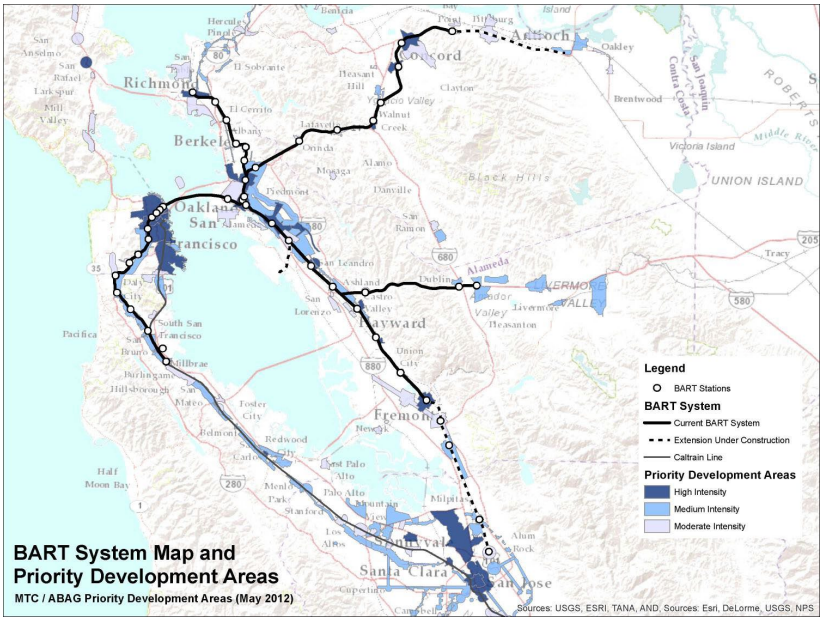
[13] https://www.bombardier.com/en/media/newsList/details.bt-20190614-bombardier-announces-expansion-of-its-u-s--footprint.bombardiercom.html

[14] These equivalencies were calculated based on the EPA Greenhouse gas equivalencies calculator: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Efficient Land Use

A key aspect of Plan Bay Area, which contains the Bay Area's strategy for reducing GHG emissions, is to concentrate new housing and jobs in designated Priority Development Areas (PDAs) that are served by BART and other transit operators (Figure 15). PDAs are areas within existing communities that local city or county governments have identified and approved for future growth. These areas typically are accessible by one or more transit services; and they are often located near established job centers, shopping districts and other services. Plan Bay Area 2040 is both a transportation plan and a housing plan and makes the case that the Bay Area currently has a housing crisis, with a need for a tremendous amount of additional affordable and other housing to support a growing population. Additionally, Plan Bay Area's Sustainable Communities Strategy calls for a 33 percent increase in the share of housing units located in PDAs that are well served by transit, many of which are centered around BART stations.

Figure 15. BART System Map and Priority Development Areas



While BART is not directly responsible for building housing, sustaining high quality transit service is essential to supporting the regional plan for concentrating housing in places best served by transit. BART proactively supports Transit Oriented Development (TOD) on its property and around its stations. As of July 2019, twenty-four TOD projects are currently under construction, planned, or completed on BART-owned property near stations, representing over $3 billion in private investment. These projects will add over 5,600 new housing units within walking distance of BART stations.[15] In general, BART's TOD Policy encourages and supports high quality TOD, including new housing within walking distance of BART stations.

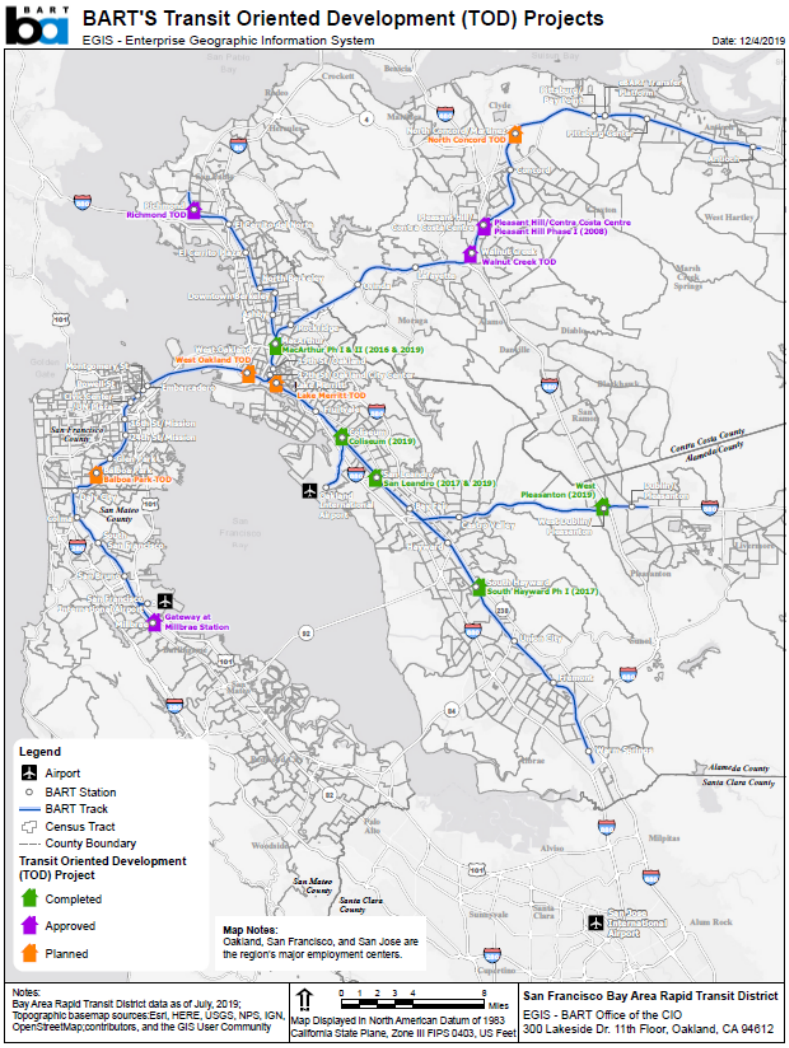
In 2016, the BART Board of Directors adopted an affordable housing policy and performance targets setting a goal of 35 percent affordable housing on its station sites which could result in an additional 7,000 affordable units over the next ten years. In addition, the BART Board also adopted TOD land use strategies, which ensure that TOD opportunities are explicitly accounted for in the acquisition of new properties, the location of new station sites, and the design and construction of station facilities. It is estimated that the TOD Policy will offset GHG emissions by 24 percent versus conventional development. This means that if BART produces 20,000 units on its property versus elsewhere in Alameda and Contra Costa counties, households will drive approximately 24 percent less. Additionally, by supporting TOD in these areas, BART is contributing to the region's Sustainable Communities Strategy goal of reducing per capita GHG emissions in 2035 by 16 percent.

[15] https://www.bart.gov/about/business/tod

BART has played a strong leadership role as a transit agency with an interest in housing, as evidenced by BART's role on the technical and steering committees of CASA – the committee to house the Bay Area – and BART's leadership role in partnership with the Nonprofit Housing Association of Northern California to draft the CASA public lands strategy. In 2018, then-Governor Brown signed AB2923 (Chiu/Grayson), which was authored in response to BART's strong Board-adopted commitments to constructing housing on BART property. This bill establishes a process by which developable BART-owned property in Alameda, Contra Costa, and San Francisco Counties will be rezoned to support transit-oriented development, and establishes development streamlining provisions similar to SB 35. BART is in the process of implementing this historic bill and has engaged the 22 jurisdictions affected by BART's TOD program.

It is assumed that many riders from these TODs on the BART system will drive BART ridership increases, once the TCCCP allows greater capacity during peak hours.

Figure 16. Station Modernization Program: Transit Oriented Development (TOD) Projects



Mixed-Use, Infill, and Multimodal Choices

As mentioned above, Plan Bay Area has placed a focus on concentrating new housing and jobs in Priority Development Areas (PDAs) that are served by BART and other transit operators. PDAs are areas within existing communities, typically accessible by one or more transit services, that local city or county governments have identified and approved for future growth and are eligible for grants that focus on affordable housing, infrastructure development, and transit-oriented development planning. While BART is not directly responsible for building housing, the focus placed on transit-oriented developments and converting under-used parcels of land near transit stations into commercial, residential, and retail centers makes housing an important consideration for the agency.

BART has also adopted an affordable housing policy and performance targets that set a goal of 35 percent affordable housing on its station sites which could result in an additional 7,000 affordable units over the next ten years. In addition, the BART Board of Directors also adopted TOD land use strategies, which ensure that TOD opportunities are explicitly accounted for in the acquisition of new properties, the location of new station sites, and the design and construction of station facilities. The emphasis placed on TOD not only displays BART's commitment to expanding the multimodal choices for residents in underdeveloped areas, but also ensuring that those residents have affordable and accessible housing options. With the implementation of the TCCCP and the TCMP, BART will be able to increase

the capacity and reliability of its existing system to better serve the anticipated increases in demand and ridership resulting from the success of sustainable development practices across the Bay Area.

See above section (Efficient Land Use) and Accessibility Section for more information on how the project supports mixed-use and in-fill development with multimodal choices.

Local Land Use Policies

Pursuant to CA Public Utilities Code 29010 (AB2923 2923, Chiu/Grayson, 2018), by July 1, 2022, local jurisdictions are required to ensure that all developable BART-owned property near stations in Alameda, Contra Costa, and San Francisco Counties will have zoning consistent with BART's 2017 TOD Guidelines. All properties will be zoned for at least 75 units/acre, with allowable heights ranging from at least 5 stories to at least 12 stories, and floor-area ratios of at least 3.0. There will be no residential or office parking minimums, with parking maximums ranging from 0.375 to 1.

The impetus for AB 2923 is BART's own ambitious policies supporting transit-oriented development. BART aims to produce 20,000 housing units, 35 percent of which are affordable, and 4.5 million square feet of office space on its property by 2040. At least 20 percent of units at any given BART development must be affordable. BART has station access and other policies supporting goals to increase the share of BART passengers using active transportation modes to access the stations and has created its own "Safe Routes to BART" funding program under Measure RR to encourage local jurisdictions to enhance local pedestrian and bicycle access.

The law further states that if a project is at least 50 percent residential, with at least 20 percent affordable housing and meeting certain labor standards, a developer of BART property may pursue SB 35 streamlining.

While state law will fully ensure that all of BART's properties are zoned for multi-family or residential mixed-use development, most local jurisdictions have adopted existing specific plans around BART stations to ensure the land use plans nearby are transit supportive, and four are currently in progress (North Concord, Irvington, North Berkeley, Ashby). Many of these existing policies include local density bonus provisions, project-level EIRs that reduce the environmental review process, or by-right development conditions.

E3. Deliverability Criteria

Matching Funds

The cost of implementing the TCMP through the Transbay Corridor is approximately $1.14 billion and is shown in Appendix I (PPR) in more detail. The following section outlines the matching funds.

TCMP implementation through the Transbay Corridor represents a usable geographic segment of the Transbay Corridor Core Capacity Program, separate from the other TCCCP components, and can be fully completed with funding from the 2020 Solutions for Congested Corridor Program.

Table 6. TCMP, Transbay Corridor Segment Cost

Funding Source	Funding Amount ($ millions)
BART Capital Allocation	$52.93
2018 TIRCP Award	$318.60
Measure RR	$312.41

FTA CIG	$397.24
2020 SCCP Request	$60.00
TOTAL	$1,141.18

Confirmation of matching funds are located at the following links:

- 2018 TIRCP Award: TIRCP Project Detail Summaries (page 5)
- FTA CIG: USDOT allocates $300 million to San Francisco Transbay Corridor Core Capacity Project

Deliverability

The TCMP will be implemented through three contracts:

1. CBTC Design-Build Contract,
2. Switch Machine Cabling Contract
3. MacArthur/Downtown Oakland Interlock Cable Upgrade Contract

The procurement process for the CBTC Design-Build Contract is currently underway and construction phase of this contract is anticipated to begin in 2021. The Switch Machine Cabling Contract will begin construction in early 2021 and be complete in February 2023. The MacArthur/Downtown Oakland Interlock Cable Upgrade Contract will begin construction in January 2022 and be complete in July 2024. These two contracts will construct portions of the train control system separate from the design-build contract and will be operational immediately upon implementation.

Table 7 shows the sources and uses of overall TCMP funding broken out by contract. 2020 SCCP funds will be used exclusively for the switch machine cabling and interlock cable upgrade contracts.

Table 7. TCMP Sources and Uses ($ millions)

Funding Source	CBTC Design-Build Contract	Switch Machine Cabling Contract	MacArthur/Downtown Oakland Interlock Cable Upgrade Contract	Total Funding
BART Capital Allocation	$52.93			$ 52.93
2018 TIRCP Award	$ 318.60			$ 318.60
Measure RR	$ 309.23	$ 3.18		$ 312.41
FTA CIG	$ 397.24			$ 397.24
2020 SCCP Request		$ 45.15	$ 14.85	$ 60.00
Total	**$1,078.00**	**$ 48.33**	**$ 14.85**	**$ 1,141.18**
Construction Begin – End Years	2021 - 2028	2021 – 2023	2022 - 2024	TCMP segment implemented in 2028

In September of 2017, BART received confirmation that its TCCCP qualified for a Categorical Exclusion (CE) from NEPA. The September 2017 CE confirmation letter from FTA is found in BART's TCCCP website. Environmental Documentation. The rail vehicle acquisition, traction power improvements and TCMP projects are statutorily exempt from the California Environmental Quality Act, and the BART Board adopted the project and certified the statutory exemption in November 2016. HMC Phase 2 was cleared through CEQA with a Negative Declaration (2011) and two addenda to the Negative Declaration (2013 and 2016). BART's TCMP does not require any third-party involvement to begin implementation.

Collaboration

Caltrans submits this 2020 SCCP application in collaboration with MTC and BART. Caltrans, while the submitter of this application, will not be responsible for project completion or funding shortfalls that may arise. Additionally, MTC, while a co-applicant, will not be responsible for project completion or funding shortfalls that may arise for the TCMP. BART will be the agency responsible for project and funding management, implementation, and execution.

The Metropolitan Transportation Commission (MTC) is the transportation planning, financing and coordinating agency for the nine-county San Francisco Bay Area. The Commission's work is guided by a 21-member policy board. MTC is responsible for producing and updating the Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle and pedestrian facilities. MTC's current RTP, known as Plan Bay Area 2040, was adopted on July 26, 2017 and includes the TCCCP within the fiscally constrained plan. As the designated recipient of federal transit formula funds in the Bay Area, MTC administers funding from several federal programs to the region's transit agencies. In addition, the Commission is a programming agent for several state transit grant programs including State Transit Assistance.

Cost Effectiveness

An economic benefit-cost analysis of the TCMP was conducted using Caltrans' Life-Cycle Benefit-Cost Analysis Model 7.2 (Cal-B/C v.6.2). Because the different components of the TCCCP (with TCMP as the most important component for reliability and capacity improvements) work together to generate the capacity improvements, the BCA evaluates the costs and benefits of the entire TCCCP. The analysis shows that the TCCCP will generate an estimated $3.5 billion in present-value benefits (2016$) over its expected useful life of 20 years, exceeding the expected TCCCP costs (capital and O&M) of $2.17 billion (discounted 2016$). With a benefit-cost ratio (BCR) of 1.6, the total TCCCP is expected to generate economic benefits that outweigh its costs. Table 8 outlines the results of the BCA over the full life of the TCCCP and in its first 20 years of operation. An Excel spreadsheet of the BCA model and supporting documentation are submitted with this SCCP application.

Table 8. Benefit Cost Analysis Results

(3)

INVESTMENT ANALYSIS
SUMMARY RESULTS

Life-Cycle Costs (mil. $)	$2,167.2
Life-Cycle Benefits (mil. $)	$3,553.3
Net Present Value (mil. $)	$1,386.2
Benefit / Cost Ratio:	1.6
Rate of Return on Investment:	8.5%
Payback Period:	7 years

ITEMIZED BENEFITS (mil. $)	Passenger Benefits	Freight Benefits	Total Over 20 Years	Average Annual
Travel Time Savings	$850.9	$0.0	$850.9	$42.5
Veh. Op. Cost Savings	$2,055.4	$0.0	$2,055.4	$102.8
Accident Cost Savings	$550.9	$0.0	$550.9	$27.5
Emission Cost Savings	$96.2	$0.0	$96.2	$4.8
TOTAL BENEFITS	$3,553.3	$0.0	$3,553.3	$177.7
Person-Hours of Time Saved			63,543,065	3,177,153

Should benefit-cost results include:

1) Induced Travel? (y/n)	Y	Default = Y
2) Vehicle Operating Costs? (y/n	Y	Default = Y
3) Accident Costs? (y/n)	Y	Default = Y
4) Vehicle Emissions? (y/n) includes value for CO_2e	Y	Default = Y

EMISSIONS REDUCTION	Tons: Total Over 20 Years	Tons: Average Annual	Value (mil. $): Total Over 20 Years	Value (mil. $): Average Annual
CO Emissions Saved	12,029	601	$0.5	$0.0
CO_2 Emissions Saved	3,330,495	166,525	$87.3	$4.4
NO_X Emissions Saved	607	30	$5.8	$0.3
PM_{10} Emissions Saved	3	0	$0.2	$0.0
$PM_{2.5}$ Emissions Saved	16	1		
SO_X Emissions Saved	33	2	$1.2	$0.1
VOC Emissions Saved	497	25	$0.3	$0.0

The increase in ridership and the corresponding decrease in VMT described in previous sections will result in fewer greenhouse gas emissions, fewer automobile crashes, and lower vehicle operating costs, which have been estimated and monetized using the parameters laid out in Cal-B/C v. 7.2. The travel time savings calculation assumes that the change in headway from 15 minutes to 12 minutes will result in the average current rider waiting 90 seconds fewer per trip (half of the decrease in headway). This figure does not account for additional time savings from reduced delays and reduced passenger queuing. Travel time changes for new riders were not included in the analysis.

F. FUNDING AND DELIVERABILITY

F1. Project Cost Estimate

The cost of implementing the TCMP through the Transbay Corridor is approximately $1.14 billion. The cost estimates below are shown in year-of-expenditure (YOE) dollars and have all been approved by the BART General Manager. See Tables 6 and 7 for details on project cost and funding sources.

Funding Sources

BART Funds ($52.93M): In June 2019, the BART Board authorized $200 million of funds, "BART Capital Allocations", to be directed to BART's Transbay Corridor Core Capacity Project. These capital allocations, as well as a prior commitment made by BART to the TCMP and other elements of the TCCCP, are generated from the Productivity-Adjusted Inflation-Based Fare Increase Program which implements fare adjustments every two years between 2014 and 2026 with capital proceeds directly allocated to a separate account to fund these projects.

2018 TIRCP ($318.60M): In 2018, BART was awarded $318.6 million in Transit and Intercity Rail Capital Improvement Program funds for funding. The TCCCP funding plan allocates the entire $318.6 million to TCMP.

Measure RR ($312.41M): Measure RR is a general obligation bond measure which was passed by the voters in the BART District in November 2016. The measure provides $3.5 billion to fund the system's most critical investments for maintaining the system in a state-of-good-repair and crowding relief. $312.41 million in Measure RR funds is programmed for this segment of the project.

FTA CIG ($397.24M): BART's Transbay Corridor Core Capacity Project is in the final stages of securing a $1.169 billion grant from Federal Transit Administration's (FTA) Capital Investment Grant (CIG) program. TCMP is a major component of this scope. In June 2019, the Transbay Corridor Core Capacity Project was admitted to Entry into Engineering phase of the CIG program, with a Full Funding Grant Agreement expected in 2020. The full CIG grant amount is for $1.169 billion, of which $397 million is programmed for TCMP.

Potential Cost Overruns

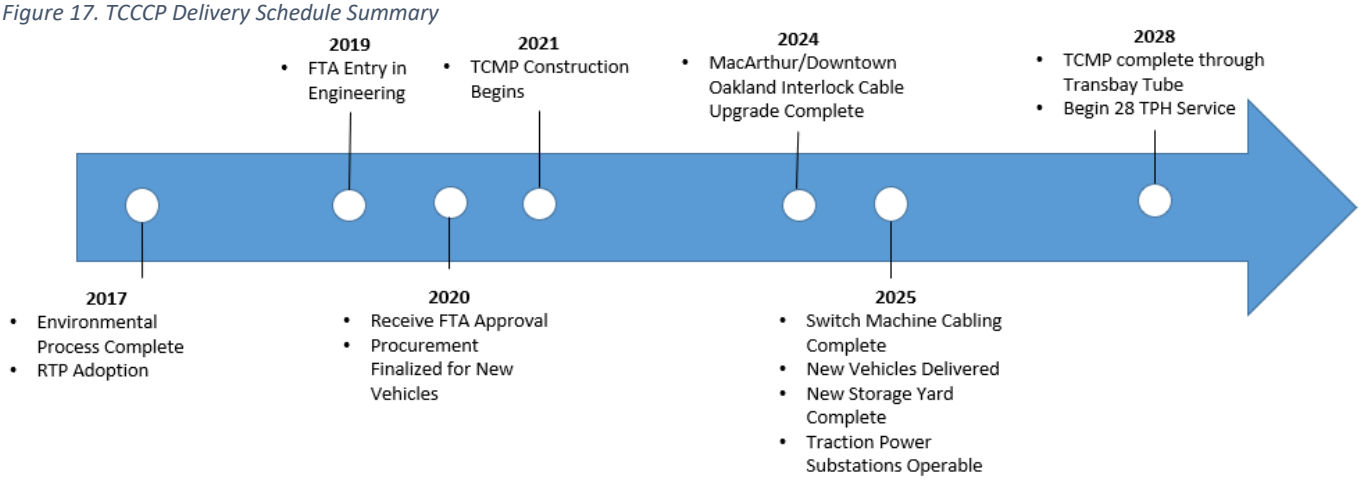
Significant program contingency is available for potential cost overruns to the entire TCCCP. BART has the project management skills, professional expertise and financial means to deliver this project, assuming funding is secured. Any cost overruns would be borne solely by BART, paid for with sources including, but not limited to, BART fare revenues and additional funding through its Measure RR program.

Project Delivery Plan

The overall TCCCP has been sequenced to deliver all four component projects concurrently to minimize the overall Program duration and bring the Program benefits to fruition as quickly as possible. As shown in Figure 17, TCMP

contains the longest schedule duration in the Program. Accordingly, the Program critical path extends through the TCMP implementation schedule.

Figure 17. TCCCP Delivery Schedule Summary



BART has begun the procurement process for the CBTC Design-Build contract and expects to begin the construction phase of this project in 2021. For the TCMP train control power cable and interlock cable upgrades, BART is expecting to give final notice to proceed (NTP) in early 2021 and early 2022 respectively. Due to contract sequencing, these two contracts are proposed to receive state SCCP funds. While each piece delivers independent utility, all three scopes will work together to deliver the full TCMP benefits outlined in this application. The TCMP schedule anticipates that the new train control system will be ready to demonstrate 28 train per hour (TPH) capacity through the Transbay Corridor by 2028.

BART has conducted a thorough analysis of the risks in fully delivering the TCMP projects and has outlined specific mitigation strategies to minimize these risks. The potential risks include unforeseen site conditions, inadequate survey data, Oakland maintenance shop availability, unforeseen HAZMAT, proposer protests, and BART staffing levels. By identifying these issues early in the design process, BART has been prepared to implement the identified strategies including the performance of additional site and conditions surveys, organizational team management to ensure appropriate staffing and organizational readiness, and other tasks. A more complete summary of the potential delivery risks can be provided upon request.

G. COMMUNITY IMPACTS

As stated previously and documented in the CE for the TCCCP, there are no adverse community effects expected from TCMP implementation.

BART riders come from across the income spectrum and from the full diversity of the region's racial and ethnic groups in rough proportion to their representation in the population of the BART district as a whole. Additionally, BART offers an essential travel option for people with disabilities, for youth and seniors, for those living in households without access to a car, and for whom daily driving would be an unaffordable expense. As the spine of the regional transit system, BART helps to make the Bay Area more affordable for lower-income households and is accessible to all. For more information on BART's impacts, please see Role of BART in the Region.

BART has a long and successful history of interacting and working with social justice, environmental, community-based, faith-based, disability rights and other groups in the BART service area. BART has solicited input and sought ideas on a wide variety of both programs and projects – from the design of new rail cars, to station area improvements or development, to changes in fares and their potential impact. BART has successfully implemented several

community-based grants such as Caltrans' Environmental Justice grants, MTC's Community-based Transportation Planning grants, as well as the successful Better BART outreach campaign in 2016.

BART's outreach efforts are designed to ensure meaningful access and participation by minority, low income, and Limited English Proficient (LEP) populations and the four projects included in the TCCCP provide benefits to these groups.

G1. Community Engagement

BART's Public Participation Plan (PPP) was developed in 2011, with an update in 2015, and followed extensive outreach throughout the BART service area and guides the organizations ongoing public participation endeavors. The PPP ensures that BART utilizes effective means of providing information and receiving public input on transportation decisions from low income, minority and limited English proficient (LEP) populations.

As recommended in the PPP, BART has implemented a variety of outreach techniques for projects related to the TCCCP. In 2014, BART launched its "Fleet of the Future" outreach campaign to obtain public feedback on the design of BART's new vehicles. A series of ten events were held at BART stations and in local communities throughout the San Francisco Bay Area. Approximately 17,500 people attended the events and a total of 7,666 surveys were collected. BART staff consulted regularly with members of the disabled community, including the BART Accessibility Task Force (BATF), on the design and functionality of the new BART trains. The BATF provided hands-on feedback on all aspects of the car design.

Outreach related to the 2014 BART Vision Plan engaged over 2,000 people in exploring the tradeoffs involved in considering how BART can meet its future needs. The public helped BART staff narrow down future projects and investments BART should focus on by determining which ones are most important to the public and fit best into BART's goals of serving the Bay Area for years to come. A total of ten in-station events were held and a total of 2,551 surveys were collected.

BART's Title VI/Environmental Justice Advisory and Limited English Proficiency Advisory committees meet regularly to assist BART on all issues of policy with a focus on meeting the needs of minority and disadvantaged communities and riders. In November 2017, both committees received a presentation on the TCCCP.

In 2017, BART also partnered with MTC to conduct outreach on its Core Capacity Transit Study, a collaborative effort to improve public transportation to and from the San Francisco core. Outreach activities consisted of two public meetings to identify investments and improvements to increase transit capacity to the San Francisco Core. Approximately 80 people participated in the public meetings.

Outreach to Disadvantage or Low-Income Communities:

- The PPP outlines strategies to engage disadvantaged and low-income communities, including: Translation of flyers and other meeting materials and interpretation services
- Outreach to Community Based Organizations (CBOs)
- Providing notification using Ethnic Media
- Hosting meetings in accessible locations

Additional Outreach activities include:

- Fleet of the Future New Train Car Model
- BART Vision – Future BART

- Embarcadero-Montgomery Capacity Implementation and Modernization Study
- Better BART
- MTC Plan Bay Area 2040
- MTC Core Capacity Transit Study
- Hayward Maintenance Complex Noise Study

Negative Impacts to Community

As noted previously, the CE for the Transbay Corridor Core Capacity Program noted no negative impacts to the community from TCMP implementation.

Effect of Public Participation

Because of the community feedback received, significant changes were made to the design of the Fleet of the Future cars, including:

- Wheelchair locations within the train car
- The number and locations of tripod standing poles
- Location and design of bike racks

Specific to bike racks: when the pilot cars were developed, the Board directed staff to test different designs for bikes onboard, so of the initial 10 pilot cars:

- Six had one bike rack with slots for three bikes
- Two had one multi-purpose space (open area with bar)
- Two had both a bike rack and a multi-purpose space

Research with cyclists in 2019 showed that while they liked having a dedicated space for bikes, the onboard rack was rated poorly on most attributes. Due to this feedback, BART recommended that the Board proceed with the open area, rather than the bike racks. The Board also decided to incorporate two bike/open areas per car rather than one.

Continued Public Engagement

Additionally, later in-service feedback and surveys drove BART to reinclude the bar/straps configuration and inclusion of two bike areas per car. Other items driven by specific outreach, surveys and feedback, include:

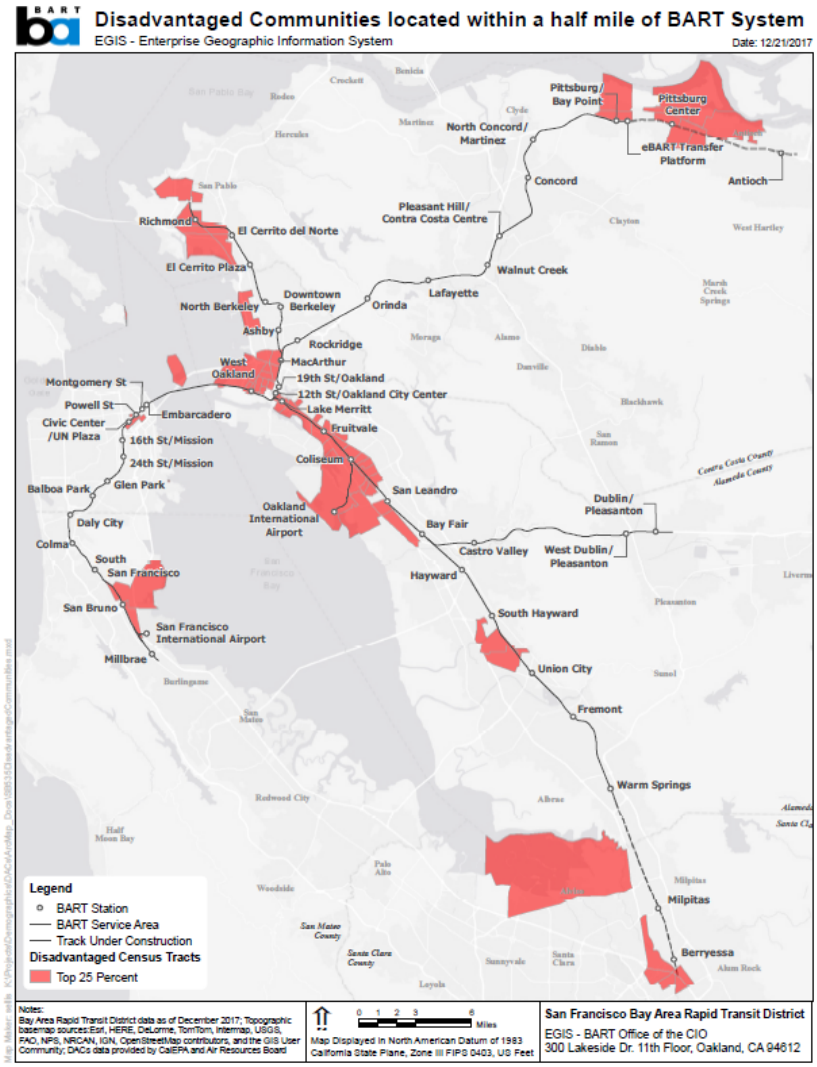
- Seat height
- Seat cushion thickness
- Legroom between seats near door and first row of forward-facing seats
- Overhead straps of varying lengths
- Overhead bars and strap configuration at center door
- Arm rests (decision not to include in most locations)
- Information set displayed on the passenger information system

Every other year, BART conducts a Customer Satisfaction Survey (2018 BART Customer Satisfaction Survey). BART's Customer Satisfaction Study is a tool to help BART prioritize efforts to achieve higher levels of customer satisfaction. The study involves surveying BART customers every two years to determine how well BART is meeting customers' needs and expectations. BART will continue to engage the public through these surveys.

G2. Location in Disadvantaged/Low-Income Community

Specifically, designated disadvantaged communities (DACs) located along/within a half mile of the BART line and to the TCCCP can be seen in Figure 18. The metric used for this DACs analysis is CalEnviroScreen's Disadvantaged Communities definition. The Core Capacity Corridor includes nine BART stations located directly within disadvantaged communities. Additionally, for the most overburdened section of the Core Capacity corridor from West Oakland to Embarcadero Station, the West Oakland Station is also located in a disadvantaged community. In total, at least 15 of the over 50 existing and planned BART stations are in disadvantaged communities. This is equal to 30 percent of all stations.

Figure 18. Disadvantaged Communities Located within a half mile of the BART System



H. OTHER

Private Investments

Not Applicable to this application.

Rail Investments

Not applicable to this application.

Caltrans | METROPOLITAN TRANSPORTATION COMMISSION | BART

Mr. Mitch Weiss
Executive Director
California Transportation Commission
1120 N Street, MS-52
Sacramento, CA 95814

Re: BART Train Control Modernization Program for Congested Corridors Program Submittal

Dear Mr. Weiss:

The California Department of Transportation (Caltrans), the Metropolitan Transportation Commission (MTC), and the San Francisco Bay Area Rapid Transit District (BART) are pleased to submit this application for the BART Train Control Modernization Program (project) in San Francisco and Alameda Counties under the Senate Bill 1 (SB 1) Solutions for Congested Corridors Program (SCCP). The request is for $60 million in SCCP funding. BART will be the implementing agency with co-sponsorship from Caltrans and MTC. Any cost overruns above the allocated amounts for the project will be covered by BART, with no additional funding from the SCCP.

The project focuses on the Transbay Corridor and will replace the existing train control systems with a new communications-based train control system, as well as updating train control power cables and interlock cables within existing right-of-way. This will allow BART to achieve shorter headways on the trunk line between Daly City and Downtown Oakland. The project is included in BART's Hybrid Summary Comprehensive Multimodal Corridor Plan, which was created in accordance with the California Transportation Commission (CTC) Solutions for Congested Corridors Program guidelines and is also included in the Regional Transportation Plan, *Plan Bay Area 2040*. The Environmental Process and 30% Design phases were completed in 2017 and the Construction phase is slated to begin in 2021.

The project is part of a wide-ranging program of BART projects that will increase capacity, relieve congestion and crowding, increase transit ridership, and decrease greenhouse gas (GHG) emissions and vehicle miles traveled (VMT) by increasing the frequency and capacity of trains operating through the BART Transbay Tube. The project will increase the number of trains operating through the Transbay Tube during the peak period from 23 to 28 per hour. This, along with BART's new vehicle procurement, will enable peak

hour train lengths to be increased from an average of 8.9 cars to 10, which will maximize throughput capacity in the most congested travel corridor in the San Francisco Bay Area. Alongside the increase of corridor capacity is the complete replacement of BART's aging and obsolete equipment with a communications-based system that will allow trains to run closer together safely. With the new equipment, BART will be able to provide reliable, consistent, and safe transit services for San Francisco Bay Area residents that will result in less environmental impact and better connections to other transit services in the region.

We greatly appreciate the California Transportation Commission's (CTC) consideration of the requested investment in this project, as it is a critical component of the transportation infrastructure for the most congested corridor in the Northern California Megaregion. We believe the project is a strong candidate for SB 1 SCCP funding.

The signatures below confirm support from Caltrans, MTC, and BART, and the undersigned hereby submit for CTC's consideration the application and the Project Programming Request forms, including the project description, funding profile, and completion dates.

Sincerely,

TOKS OMISHAKIN
Director
California Department of Transportation

7-16-2020
Date

TONY TAVARES
District Director
California Department of Transportation
District 4

6-30-2020
Date

THERESE W. MCMILLAN
Executive Director
Metropolitan Transportation Commission

6/29/2020
Date

ROBERT POWERS
General Manager
San Francisco Bay Area Rapid Transit District

17 JUNE 2020
Date

APPENDIX II—PERFORMANCE INDICATORS AND MEASURES

Measure	Metric	Build	Future No Build	Change	Methodology	Data/Assumptions
Congestion Reduction	Project Area, Corridor, County, or Regionwide VMT per capita and total VMT	0	Total: 10.7 million Per trip: 13.7	Total: 10.7 million Per trip: 13.7	Cal-B/C v. 7.2: Per trip length x (new person trips on rail * percent trips from parallel highway / vehicle occupancy factor)	***Annual Person-Trips*** — No Build / Build Base (Year 1): 127,086,130 / 171,152,768 Forecast (Year 20): 127,086,130 / 186,252,468 ***Percent Trips during Peak***: 100% ***Percent New Trips from Parallel Highway***: 79% Maximum person-trips occur by Year 7 Average trip distance of auto trips replaced with project = 13.7 miles
	Person Hours of Travel Time Saved	63,543,065	0	63,543,065	Cal-B/C v. 7.2: Travel time savings per trip x (existing users + .5 x new users)	Travel time savings per trip = 1.5 minutes, based on reduction of headways between trains
System Reliability	Transit Service On-Time Performance	90.1% - 91.2%	89% (as of 2017)	10% - 20% reduction in delays from TCMP implementation	Current On Time Performance (2017 %) + % of delays that were due to train control (10% - 20%)	In 2017, the On-Time performance was 89%. It is assumed that this on-time performance will continue if project is not implemented. Future Build case On-Time performance is estimated to be 10% - 20% better than current (2017) because 10% - 20% of delays in 2017 were due to train control issues.
Safety	Number of Fatalities over 20-year analysis period	Auto: 0 Rail: 14.7 Total: 14.7	Auto: 64.3 Rail: 12.6 Total: 76.9	Auto: -64.3 Rail: 2.1 Total: -62.2	Cal-B/C v. 7.2: fatality rate per million VMT x annual VMT / 1,000,000	Cal-B/C v. 7.2: Statewide auto fatality rate = 0.006 per million VMT Passenger rail fatality rate = 0.0555 per million VMT
	Number of Serious Injuries over 20-year analysis period	Auto: 0 Rail: 66.7 Total: 66.7	Auto: 3105.5 Rail: 57.3 Total: 3162.8	Auto: -3105.5 Rail: 9.4 Total: 3096.1	Cal-B/C v. 7.2: injury rate per million VMT x VMT / 1,000,000	Cal-B/C v. 7.2: Statewide injury rate = 0.29 per million VMT Passenger rail injury rate = 0.2519 per million VMT

<table>
<tr><td></td><td>Number or Rate of Property Damage Only and Non-Serious Injury Collisions over 20-year analysis period</td><td>Auto: 0
Rail: 73.5
Total: 73.5</td><td>Auto: 5,889.8
Rail: 63.1
Total: 5952.9</td><td>Auto: -5,889.8
Rail: 10.4
Total: -5879.4</td><td>Cal-B/C v. 7.2: PDO rate per million VMT x VMT / 1,000,000</td><td>Cal-B/C v. 7.2: Statewide PDO rate = 0.55 per million VMT
Passenger rail PDO rate = 0.2775 per million VMT</td></tr>
<tr><td></td><td>Accident Cost Savings</td><td>$550 million</td><td>0</td><td>$550 million</td><td>Cal-B/C v. 7.2: Change in fatalities, injuries, & PDO collisions x recommended $ values per type of collision</td><td>Cal-B/C v. 7.2:
<table><tr><th>Event</th><th>Pass Train</th><th>Auto</th></tr><tr><td>Fatality</td><td>$9,800,000</td><td>$10,800,000</td></tr><tr><td>Injury</td><td>$180,500</td><td>$148,800</td></tr><tr><td>Prop Damage</td><td>$78,800</td><td>$9,700</td></tr></table></td></tr>
<tr><td>Economic Development and Job Creation</td><td>Jobs Created (Direct and Indirect)</td><td>$60 million SCCP investment = 660 jobs

$1.14 billion overall TCMP investment = 12,540 jobs</td><td>NA</td><td>660 jobs for SCCP investment

12,540 jobs for overall TCMP investment</td><td>Caltrans uses 11 jobs per $1 million invested in 2018 Executive Fact Book</td><td>Caltrans Executive Factbook</td></tr>
<tr><td rowspan="7">Air Quality & Greenhouse Gas Emissions</td><td>Particulate Matter 2.5 (PM 2.5)</td><td>0</td><td>16.44</td><td>-16.44</td><td rowspan="7">Calculated in Cal-B/C v. 7.2</td><td rowspan="7">Based on change in auto VMT from trips replaced with transit (see above), as well as on new rail VMT associated with new service
<table><tr><td>Annual Vehicle-Miles</td><td>No Build</td><td>Build</td></tr><tr><td>Base (Year 1)</td><td>11,366,126</td><td>13,237,856</td></tr><tr><td>Forecast (Year 20)</td><td>11,366,126</td><td>13,237,856</td></tr><tr><td>Average Vehicles/Train</td><td>8</td><td>9</td></tr></table></td></tr>
<tr><td>Particulate Matter 10 (PM 10)</td><td>15.46</td><td>18.11</td><td>-2.65</td></tr>
<tr><td>Carbon Dioxide (CO2)</td><td>0</td><td>3,330,494.57</td><td>-3,330,494.57</td></tr>
<tr><td>Volatile Organic Compounds (VOC)</td><td>7.29</td><td>504.05</td><td>-496.76</td></tr>
<tr><td>Sulphur Dioxides (SOX)</td><td>0</td><td>32.91</td><td>-32.91</td></tr>
<tr><td>Carbon Monoxide (CO)</td><td>16.86</td><td>12,046.20</td><td>-12,029.34</td></tr>
<tr><td>Nitrogen Oxides (NOX)</td><td>135.45</td><td>742.46</td><td>-607.02</td></tr>
</table>

	Total	175.05	3,343,854.74	-3,343,679.69		
Cost Effectiveness	Cost Benefit Ratio	1.6	N/A	1.6	Cal-B/C v. 7.2	As indicated elsewhere in table and in accompanying Excel file

Efficient Land Use	Land Use Efficiency Supplement's Land Use Efficiency Indicators	• The project is located in a jurisdiction that has adopted:
		  ○ A by-right (nondiscretionary) approval process for multifamily residential development
		  ○ A density bonus ordinance whose allowable density increase exceeds the requirements of State Density Bonus Law
		• The project is located within a half-mile of a high-quality transit corridor and major transit stop,, as defined by Public Resources Code sections 21155 and 21064.3
		• The project furthers the forecasted development pattern of the applicable Regional Transportation Plan's Sustainable Communities Strategy
		• In 2016, the BART Board of Directors adopted an affordable housing policy and performance targets setting a goal of 35 percent affordable housing on its station sites which could result in an additional 7,000 affordable units over the next ten years
		Pursuant to CA Public Utilities Code 29010 (AB2923 2923, Chiu/Grayson, 2018), by July 1, 2022, local jurisdictions are required to ensure that all developable BART-owned property near stations in Alameda, Contra Costa, and San Francisco Counties will have zoning consistent with BART's 2017 TOD Guidelines				

Accessibility	Number of Jobs Accessible by Mode and Access to Key Destinations by Mode	3,336 Jobs (average of 8 stations)	1,924 Jobs (average of 8 stations)	+ 1,412 Jobs accessible by BART	Using an average walking time of 3 mph, it will take passengers 5 minutes to walk 0.25 miles to the station (No Build). The TCMP saves 1.5 minutes due to shorter headways, equating to an extra 0.075 miles distance to the station (Build).	Analysis using U.S. Census Bureau's Local Employment Household Dynamics On-the-Map tool. All employment numbers from 2017. Assumed an average walking time of 3mph. The number of jobs was found by taking the average of the areas around 8 BART stations in the Corridor (Embarcadero, Montgomery, Powell, Civic Center/UN Plaza, West Oakland, 12th Street/Oakland, 19th Street/Oakland, MacArthur).
	% of Population Defined as Low Income or Disadvantaged within ½ mile of rail station,	33% Low Income within a ½ mile of BART station	33% Low Income with a ½ mile of BART Station	No Change	The total population within ½ mile of BART stations (full system, partial census tract) is 429,416. The	Low Income Census Tract Data, Census Bureau

	ferry terminal, or high-frequency bus stop				population defined as low income within ½ mile of BART stations (full system, partial census tract) is 142,610. 142,610 / 429,416 = 33.2%	