ROAD REPAIR AND ACCOUNTABILITY ACT OF 2017
PROJECT BASELINE AGREEMENT

SamTrans Emission Zero Project

Resolution LPP-P-2324-05B
(to 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) effective on December 6, 2023 (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 Mateo County Transit Distirct, and the Implementing Agency, San Mateo County Transit District, sometimes collectively referred to as the "Parties".

3. RECITAL

3.1 Whereas at its 6/28/2023 meeting the Commission approved the Local Partnership Program and included in this program of projects the SamTrans Emission Zero Project, 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***, the Project Report attached hereto as ***Exhibit B***, the Performance Metrics Form, if applicable, attached hereto as ***Exhibit C***, as the baseline for project monitoring by the Commission.

3.2 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 _____, "Adoption of Program of Projects for the Active Transportation Program", dated _____
- ■ Resolution G-23-47, "Adoption of Program of Projects for the Local Partnership Program", dated 6/28/2023
- ☐ Resolution _____, "Adoption of Program of Projects for the Solutions for Congested Corridors Program", dated _____
- ☐ Resolution _____, "Adoption of Program of Projects for the State Highway Operation and Protection Program", dated _____
- ☐ Resolution _____, "Adoption of Program of Projects for the Trade Corridor Enhancement Program", dated _____

4.3 All signatories agree to adhere to the Commission's 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 San Mateo County Transit District agrees to secure funds for any additional costs of the project.

4.6 San Mateo County Transit District agrees to report to Caltrans on a quarterly basis; on the progress made toward the implementation of the project, including scope, cost, schedule, and anticipated benefits/performance metric outcomes.

4.7 Caltrans agrees to prepare program progress reports on a 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 San Mateo County 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 San Mateo County Transit District agrees to submit a timely Project Performance Analysis as specified in the Commission's SB 1 Accountability and Transparency Guidelines.

4.10 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 and performance metric outcomes during the course of the project, and retain those records for six years from the date of the final closeout of the project. Financial records will be maintained in accordance with Generally Accepted Accounting Principles.

4.11 The 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 six 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 Performance Metrics
See Performance Metrics Form, if applicable, attached as Exhibit C.

5.4 Additional Provisions and Conditions *(Please attach an additional page if additional space is needed.)*

Attachments:

Exhibit A: Project Programming Request Form
Exhibit B: Project Report
Exhibit C: Performance Metrics Form *(if applicable)*

SIGNATURE PAGE
TO
PROJECT BASELINE AGREEMENT

Project Name: SamTrans Emission Zero Project

Resolution: LPP-P-2324-05B

(to be completed by CTC)

April Chan Digitally signed by April Chan Date: 2023.10.12 09:17:10 -07'00' — 10/12/2023

April Chan

General Manager/CEO

Project Applicant

April Chan Digitally signed by April Chan Date: 2023.10.12 09:17:26 -07'00' — 10/12/2023

April Chan

General Manager/CEO

Implementing Agency

Leah Budu — 10/20/2023

For Dina El-Tawansy

District Director

California Department of Transportation

11/27/2023

Tony Tavares

Director

California Department of Transportation

01/10/24

Tanisha Taylor

Executive Director

California Transportation Commission

FACT SHEET

SAMTRANS EMISSION ZERO PROJECT

San Mateo County Transit District (SamTrans)

Project Location:

San Mateo County

Project Scope:

The SamTrans Emission Zero Project (Project or Emission Zero) is an integral part of the electrification of SamTrans' bus fleet. The Project will install electric charging infrastructure at SamTrans' South Base Maintenance and Operations Facility in San Carlos, California. The scope of work includes construction of charging infrastructure and bus charging bays, procurement and installation of 37 overhead pantograph charging dispensers, and construction of essential power distribution networks.

Schedule

Phases	Completion Date
Environmental (PA&ED):	January 2023
Final Design (PS&E):	March 2024
Right of Way (R/W):	March 2024
Begin Construction (CON):	October 2024
Construction Completion:	October 2026

Project Benefits:

Emission Zero is vital to meeting the goal of decarbonizing SamTrans bus transit services. The Project will enable the deployment of SamTrans' first set of 37 battery-electric buses (BEB), including BEBs that will serve the US-101 Express Bus Route EPX (East Palo Alto – San Bruno BART), a new expansion route that will serve San Mateo County's equity priority areas, and provide direct service between key destinations on the US 101 corridor. In addition, the Project will enable SamTrans to catalyze its broader deployment of future BEBs and fully implement improvements identified through Reimagine SamTrans (Reimagine), a comprehensive operational analysis that evaluated the SamTrans bus system and developed a new network.

Funding

Total Project Cost:	$32,605,000
Project Construction Cost:	$29,648,000
Total LPP-C Request:	$14,824,000 (50% of Construction)

Route EPX and Reimagine	Battery Electric Buses
The new express Route EPX is designed to strengthen transit connectivity to jobs and housing hubs by providing service between prime job and living locations, improve transportation equity by enhancing service in areas currently under-served by high capacity transit, and support sustainable land use and transportation policies and goals. Reimagine focused on expanding bus routes to increase accessibility, connectivity and ridership, enhance integrated services and improve safety for transit dependent, historically under-served and low-income communities.	Diesel buses are major contributors to greenhouse gas (GHG) emissions and represent 89 percent of SamTrans' GHG emissions. This Project is an important next step in the electrification of the bus fleet to reduce the region's GHG and carbon emissions, reduce fossil fuel consumption, and provide more efficient and equitable access to sustainable and clean public transportation in San Mateo County. The Project will allow SamTrans to efficiently operate its first set of BEBs replacement buses and EPX expansion fleet.

State Transportation Improvement Program

San Mateo County
Document Year 2022, Version Number 1
PPNO: LP010
(Dollars in Thousands)

DIST:	PPNO:	EA:	CTIPS ID:	TCRP NO.:
04	LP010		106-0000-3285	

CT PROJECT ID:

COUNTY:	ROUTE:	PM:
San Mateo County	U	

TITLE (DESCRIPTION):
SamTrans Emission Zero Project (The proposed electric charging infrastructure is located at SamTrans? South Base Maintenance Facility (South Base), located in the City of San Carlos, San Mateo County, the bus network at South Base serves routes to the 14 cities of San Mateo County. The Project will construct core transit infrastructure improvements at SamTrans? bus facility. The Project scope includes infrastructure required for the first set of SamTrans? zero-emission buses, including construction of electrical charging infrastructure and bus charging bays, procurement and installation of overhead pantograph charging dispenser, and construction of an electrical power distribution network that is scalable for future BEB expansion. Charging infrastructure for thirty-seven BEBs is proposed under this Project to enable successful deployment and safe operations of SamTrans? new fleet of 40-foot BEBs to be delivered by 2025.)

ELEMENT: Mass Transit

SPONSOR: San Mateo County Transit District

MPO: Metropolitan Transportation Commission

CORRIDOR:

PRJ MGR: Lisha Mai

PHONE: (650) 508-6353

EMAIL: mail@samtrans.com

MPO ID:	LAW:
6	23

ASSEMBLY: 12,19,22
SENATE: 8,13
CONGRESS: 12,15

IMPLEMENTING AGENCIES:

PAED San Mateo County Transit District
PSE San Mateo County Transit District
RW San Mateo County Transit District
CON San Mateo County Transit District

Categories	Outputs/Outcomes	Unit	Total
Rail/Multi-Modal	Rail/Transit Equipment	Each	37
Facilities	Facility Improvements	Each	1

PROJECT VERSION HISTORY *(Printed Version is Shaded)* (Last 9 versions displayed)

Programmed Dollars in Thousands - Total for Project

Version	Status	Date	Updated By	Change Reason	Amend No.	Vote	Cum Award	Prog Con	Prog RW	PA & ED	PS & E	RW Sup	Con Sup
1	Official	06/28/2023	SBERTOZZ	Adoption - New Project	G-23-47			29,648		481	2,476		

Fund Source 1 of 4 Local Funds

Extension

VOTE DATE AMOUNT

20.10.400.100 - Locally Generated Funds

Fund Type
SAMTRANS Revenue

Funding Agency
San Mateo County Transit District

	PRIOR	22-23	23-24	24-25	25-26	26-27	27-28	FUTURE	TOTAL
PA&ED	481								481
PS&E	2,476								2,476
R/W SUP									
CON SUP									
R/W									
CON			7,317						7,317
Total:	2,957		7,317						10,274

Fund Source 2 of 4 FTA Funds

Extension

VOTE DATE AMOUNT

FTA-TRANSIT - FTA Funds

Fund Type
FTA5307 - Urbanized Area Formula Program

Funding Agency
Metropolitan Transportation Commission

	PRIOR	22-23	23-24	24-25	25-26	26-27	27-28	FUTURE	TOTAL
PA&ED									
PS&E									
R/W SUP									
CON SUP									
R/W									
CON			2,907						2,907
Total:			2,907						2,907

State Transportation Improvement Program

San Mateo County
Document Year 2022, Version Number 1
PPNO: LP010
(Dollars in Thousands)

Fund Source 3 of 4 Other State

Extension

VOTE	DATE	AMOUNT

20.30.207.811 - Environmental Enhancement & Mitigation (EEM)
Fund Type
Low Carbon Transit Operations Program (LCTOP)
Funding Agency
Caltrans

	PRIOR	22-23	23-24	24-25	25-26	26-27	27-28	FUTURE	TOTAL
PA&ED									
PS&E									
R/W SUP									
CON SUP									
R/W									
CON			4,600						4,600
Total:			4,600						4,600

Fund Source 4 of 4 State SB1 LPP

Extension

VOTE	DATE	AMOUNT

30.10.724.200 - Local Partnership Program - SB1 - MT - LPP-C
Fund Type
Local Partnership Program - Competitive program
Funding Agency

	PRIOR	22-23	23-24	24-25	25-26	26-27	27-28	FUTURE	TOTAL
PA&ED									
PS&E									
R/W SUP									
CON SUP									
R/W									
CON			14,824						14,824
Total:			14,824						14,824

Project Total:

VOTE	TOTAL AMOUNT
PAED	
PSE	
RW	
CON	
R/W SUP	
CON SUP	

	PRIOR	22-23	23-24	24-25	25-26	26-27	27-28	FUTURE	TOTAL
PA&ED	481								481
PS&E	2,476								2,476
R/W SUP									
CON SUP									
R/W									
CON			29,648						29,648
Total:	2,957		29,648						32,605

HQ Comments:
******** VERSION 1 - 09/19/2023 ********
Program $14.824M LPP-C Con - Cycle 3 FY 23/24 June 2023 SB
******** RTIP Version 1 - 09/19/2023 ********

Exhibit A: Project Programming Request Form

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6014-2023-0001 v0.1

Amendment (Existing Project) ☐ YES ☒ NO						Date	09/19/2023 09:54:27
Programs ☒ LPP-C	☐ LPP-F	☐ SCCP	☐ TCEP	☐ STIP	☐ Other		
District	EA	Project ID	PPNO	Nominating Agency			
04				San Mateo County Transit District			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
San Mateo County	U						
				MPO	Element		
				MTC	Mass Transit (MT)		
Project Manager/Contact			Phone	Email Address			
Lisha Mai			650-508-6353	mail@samtrans.com			

Project Title

SamTrans Emission Zero Project

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

The proposed electric charging infrastructure is located at SamTrans' South Base Maintenance Facility (South Base), located in the City of San Carlos, San Mateo County, the bus network at South Base serves routes to the 14 cities of San Mateo County. The Project will construct core transit infrastructure improvements at SamTrans' bus facility. The Project scope includes infrastructure required for the first set of SamTrans' zero-emission buses, including construction of electrical charging infrastructure and bus charging bays, procurement and installation of overhead pantograph charging dispenser, and construction of an electrical power distribution network that is scalable for future BEB expansion. Charging infrastructure for thirty-seven BEBs is proposed under this Project to enable successful deployment and safe operations of SamTrans' new fleet of 40-foot BEBs to be delivered by 2025.

Component	Implementing Agency
PA&ED	San Mateo County Transit District
PS&E	San Mateo County Transit District
Right of Way	San Mateo County Transit District
Construction	San Mateo County Transit District

Legislative Districts					
Assembly:	19,22,12	Senate:	8,13	Congressional:	12,15

Project Milestone	Existing	Proposed
Project Study Report Approved	01/01/2020	
Begin Environmental (PA&ED) Phase		11/01/2021
Circulate Draft Environmental Document Document Type (ND/MND)/CE		09/01/2022
Draft Project Report		12/30/2022
End Environmental Phase (PA&ED Milestone)		06/20/2023
Begin Design (PS&E) Phase		02/01/2023
End Design Phase (Ready to List for Advertisement Milestone)		06/30/2024
Begin Right of Way Phase		02/01/2023
End Right of Way Phase (Right of Way Certification Milestone)		03/31/2024
Begin Construction Phase (Contract Award Milestone)		10/15/2024
End Construction Phase (Construction Contract Acceptance Milestone)		10/31/2026
Begin Closeout Phase		11/30/2026
End Closeout Phase (Closeout Report)		05/31/2027

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6014-2023-0001 v0.1

Date 09/19/2023 09:54:27

Purpose and Need

The SamTrans' Emission Zero Project will implement core infrastructure improvements to support charging of SamTrans' zero emission bus fleet called for in SamTrans' Innovative Clean Transit (ICT) Rollout Plan and the Zero-Emission Fleet Transition Plan. The SamTrans Emission Zero Project (Project) is integral to meet the goal of decarbonizing SamTrans bus transit services. The Project will bring to fruition benefits from capital, operating, and planning investments already made, which include acquisition of 37 battery-electric buses (BEB) with Transit Signal Priority equipment, workforce training and development, network improvements under Reimagine SamTrans, and the upcoming launch of zero emissions express bus service. The Project is essential to increasing ridership, reducing greenhouse gas (GHG) emissions, improving operational performance, strengthening transit connectivity to jobs and housing hubs, and improving transportation equity by prioritizing the delivery of zero emission technology and service to disadvantage communities and low-income communities. Additionally, improvements will allow SamTrans to catalyze future expansion of its BEB fleet, replacing the need for diesel buses on SamTrans' network. This project represents smart, strategic integrated investments to help reduce carbon pollution and strengthen the economy while maximizing returns on public investments.

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
Facilities	Facility Improvement	EA	1
Rail/ Multi-Modal	Rail/Transit Equipment	EA	37

Additional Information

Emission Zero is integral to meet the goal of decarbonizing SamTrans bus transit services. The project will enable the deployment of SamTrans' first set of 37 battery-electric buses (BEB), including BEBs that will serve the US-101 Express Bus Route EPX (East Palo Alto – San Bruno BART), a new expansion route that will serve San Mateo County's equity priority areas, providing direct service between key destinations on the US 101 corridor. In addition, the Project will enable SamTrans to catalyze its broader deployment of future BEBs, replacing the need for diesel buses on SamTrans' network and fully implement improvements identified through Reimagine SamTrans, a comprehensive operational analysis that evaluated the SamTrans bus system and developed a new network.

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPC, SCCP, LPPF	Change in Daily Vehicle Miles Travelled	Miles	0	0	0
			VMT per Capita	13,323,149.1	13,324,941.1	-1,792
	LPPC, SCCP, LPPF	Person Hours of Travel Time Saved (Only 'Change' required)	Person Hours	420,816.1	422,398.3	-1,582.2
			Hours per Capita	0	0	0
System Reliability (Freight)	LPPC, SCCP, LPPF	Peak Period Travel Time Reliability Index (Only 'No Build' Required)	Index	0	0	0
	LPPC, SCCP, LPPF	Level of Transit Delay (if required)	% "On-time"	0	0	0
Air Quality & GHG (only 'Change' required)	LPPC, SCCP, TCEP, LPPF	Particulate Matter	PM 2.5 Tons	0	0	0
			PM 10 Tons	0	0	0
	LPPC, SCCP, TCEP, LPPF	Carbon Dioxide (CO2)	Tons	0	820.9	-820.9
	LPPC, SCCP, TCEP, LPPF	Volatile Organic Compounds (VOC)	Tons	0	0	0
	LPPC, SCCP, TCEP, LPPF	Sulphur Dioxides (SOx)	Tons	0	0	0
	LPPC, SCCP, TCEP, LPPF	Carbon Monoxide (CO)	Tons	0	3.6	-3.6
	LPPC, SCCP, TCEP, LPPF	Nitrogen Oxides (NOx)	Tons	0	0.7	-0.7
Safety	LPPC, SCCP, TCEP, LPPF	Number of Fatalities	Number	0.07392	0.07393	-0.00001
	LPPC, SCCP, TCEP, LPPF	Fatalities per 100 Million VMT	Number	0.005	0.005	0
	LPPC, SCCP, TCEP, LPPF	Number of Serious Injuries	Number	0.27818	0.27822	-0.00004
	LPPC, SCCP, TCEP, LPPF	Number of Serious Injuries per 100 Million VMT	Number	0.28	0.28	0
Economic Development	LPPC, SCCP, TCEP, LPPF	Jobs Created (Only 'Build' Required)	Number	423.8	0	423.8
Cost Effectiveness (only 'Change' required)	LPPC, SCCP, TCEP, LPPF	Cost Benefit Ratio	Ratio	1.46	0	1.46
Vehicle Volume	LPPC, LPPF, SCCP	Existing Average Annual Vehicle Volume on Project Segment	Number	0	0	0
	LPPC, LPPF, SCCP	Estimated Year 20 Average Annual Vehicle Volume on Project Segment with Project	Number	0	0	0

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6014-2023-0001 v0.1

District	County	Route	EA	Project ID	PPNO
04	San Mateo County				

Project Title

SamTrans Emission Zero Project

Existing Total Project Cost ($1,000s)									
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Implementing Agency
E&P (PA&ED)									San Mateo County Transit District
PS&E									San Mateo County Transit District
R/W SUP (CT)									San Mateo County Transit District
CON SUP (CT)									San Mateo County Transit District
R/W									San Mateo County Transit District
CON									San Mateo County Transit District
TOTAL									
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)	481							481	
PS&E	2,476							2,476	
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		29,648						29,648	
TOTAL	2,957	29,648						32,605	

Fund #1:	Local Funds - SAMTRANS Revenue (Committed)								Program Code
Existing Funding ($1,000s)									
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)									San Mateo County Transit District
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)	481							481	
PS&E	2,476							2,476	
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		7,317						7,317	
TOTAL	2,957	7,317						10,274	

Fund #2:	FTA Funds - FTA5307 - Urbanized Area Formula Program (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)									Metropolitan Transportation Commiss
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									Zero Emission Bus (ZEB)
PS&E									Infrastructure Set-Aside Program
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		2,907						2,907	
TOTAL		2,907						2,907	

Fund #3:	Other State - Low Carbon Transit Operations Program (LCTOP) (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)									Caltrans District 4
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		4,600						4,600	
TOTAL		4,600						4,600	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6014-2023-0001 v0.1

Fund #4:	State SB1 LPP - Local Partnership Program - Competitive program (Uncommitted)								Program Code
Existing Funding ($1,000s)									
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)									California Transportation Commissio
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		14,824						14,824	
TOTAL		14,824						14,824	

Exhibit B: Project Report

Project Report

San Mateo County Transit District
EMISSION ZERO PROJECT

San Carlos, California

Prepared by: _____ Date 9/25/2023

Lisha Mai
Manager, Grants and Fund Programming
San Mateo County Transit District

Approved by: Eve Ng Date 09/25/2023

Evelyn Ng
Director, Grants and Fund Management
San Mateo County Transit District

This project study report-project development support has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

9/7/23

REGISTERED CIVIL ENGINEER *DATE*

Table of Contents

As needed, include a table of contents with the topics from the body of the report.

1. INTRODUCTION

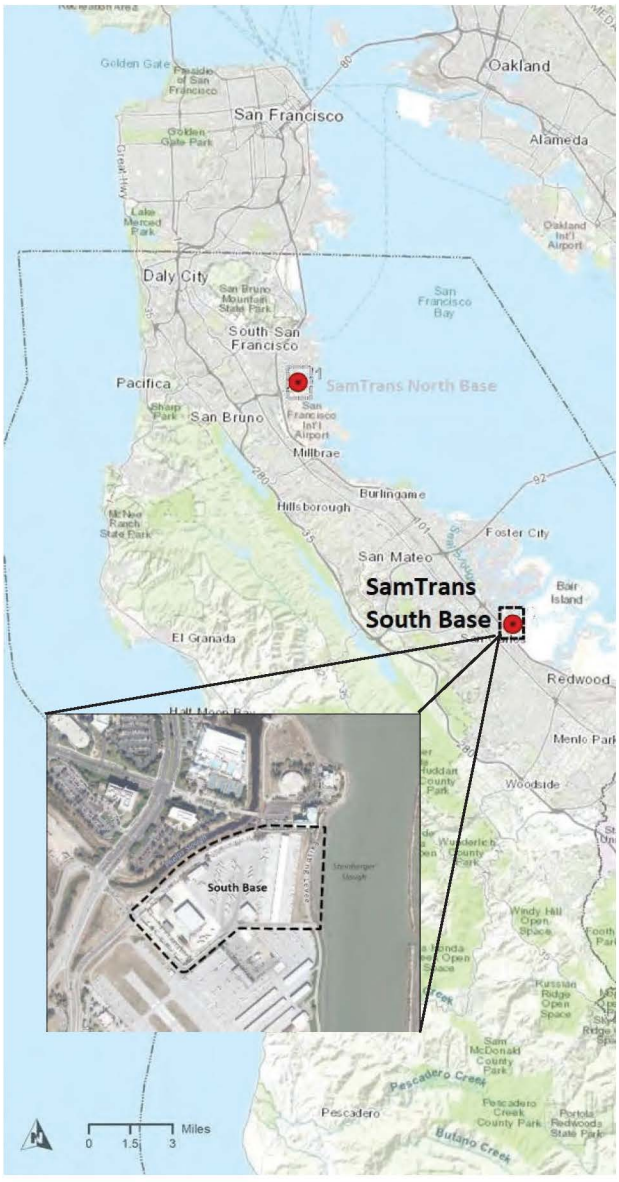
Project Description:

The San Mateo County Transit District (SamTrans) Emission Zero Project (Project) consists of the procurement and installation of battery-electric buses (BEB) charging equipment, construction of charging infrastructure and new bus charging bays, and construction of essential electrical power distribution networks needed to enable the operation of SamTrans' zero-emission buses. The Project includes construction of electrical charging infrastructure and bus charging bays, procurement and installation of 37 overhead pantograph charging dispensers, and construction of an electrical power distribution network that is scalable for future zero emission expansion. The proposed charging infrastructure under this Project will enable successful deployment and safe operations of SamTrans' new fleet of 40-foot BEBs to be delivered by 2025.

These core infrastructure improvements will allow SamTrans to catalyze future expansion of its BEB fleet, replacing the need for diesel buses in SamTrans' network. This Project represents smart, strategic integrated investments to help reduce carbon pollution and strengthen the economy while maximizing returns on public investments.

Project Location:

While the Project is located at SamTrans' South Base Maintenance Facility (South Base), in the City of San Carlos, San Mateo County, the bus network at South Base serves routes to the 14 cities of San Mateo County including Daly City, South San Francisco, San Mateo, Half Moon Bay, Redwood City, and East Palo Alto, as well as City and County of San Francisco. SamTrans fixed-route bus service can be categorized into Community Services, Regional Connections, and Express Routes. Community Services includes high frequency



Project Location Map

routes, school-oriented routes, and routes considered as lifelines to the community. Regional Connections include routes connecting the community to Caltrain, a local commuter railroad between the City of San Francisco and City of San Jose; Bay Area Rapid Transit (BART), a rapid transit system that connects SamTrans riders to the eastern San Francisco Bay and cities such as Oakland and Berkeley; and San Francisco International Airport.

2. BACKGROUND

The SamTrans' Innovative Clean Transit (ICT) Rollout Plan and the Zero-Emission Fleet Transition Plan identify key projects in SamTrans' capital program that are required to meet the California Air Resources Board (CARB) mandate and the Climate Action Plan for Transportation Infrastructure (CAPTI) to combat and adapt to climate change while supporting public health, safety and equity. Under both plans, the Project is identified as an essential need in propelling SamTrans into the future with a 100 percent zero emission bus fleet.

Project Scope:
The Project will implement core transit infrastructure improvements at SamTrans' existing bus facility. The Project scope includes infrastructure required for the first set of SamTrans' zero-emission buses, including construction of electrical charging infrastructure and bus charging bays, procurement and installation of 37 overhead pantograph charging dispensers, and construction of an electrical power distribution network that is scalable for future BEB expansion.

Emission Zero will enable SamTrans to focus on the operation and prioritize the deployment of its first set of BEBs on routes that service historically disadvantaged communities, including the expansion route, Route EPX, which serves and connects East Palo Alto and Redwood City to SFO Airport and the San Bruno BART Station.

Project Delivery:
SamTrans will employ the Construction Manager/General Contractor (CMGC) delivery method for the Project. CMGC is an alternative delivery method that allows SamTrans to obtain input from the CMGC during the design phase, leveraging the CMGC's expertise in construction to obtain a more cost-effective and efficient design. The CMGC will be selected on the basis of qualifications, experience and best-value.

The Project will be constructed within the existing property boundaries of South Base. With no right-of-way acquisition, minimal utility relocations and environmental impacts, the proposed improvements will be implemented expeditiously, with design expected to be complete by 2024. The Construction phase of the Project is anticipated to begin in late 2024/early 2025.

Digital Rendering of Overhead Pantograph Charging Infrastructure
Top-down pantographs minimize personnel resources required for charging and increases depot charging throughput and efficiency. The ceiling-mounted pantographs also allow for fast charging, reduce infrastructure footprint, and eliminate safety issues during charging.

3. PURPOSE AND NEED

Purpose:

The primary purpose of the Project is to enable SamTrans to deploy zero emission vehicles that will improve transit reliability and safety, increase ridership, enhance access for the traveling public, and promote convenient, clean and competitive alternative modes of transportation.

Need:

The Project will enable the deployment of SamTrans' first set of zero emission BEBs and set the electrical network system to support future expansion of the BEB fleet. Nearly 90 percent of SamTrans' riders are low-income, transit dependent customers with limited or no access to a personal vehicle, making SamTrans bus service a vital transportation resource. Communities along South Base bus routes experiences some of the most severe pollution burdens related to diesel particulate matter (PM) exposure and auto emissions resulting from traffic congestion. According to CalEnviroScreen 4.0, South Base serves disadvantage communities that are in the 99th percentile for the diesel PM emissions category. These areas rank among the highest in California for incidents of asthma and overall pollution burden.

In 1994, Executive Order 12898 was issued to address environmental justice (EJ) in minority and low-income populations with the purpose of focusing federal attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities. SamTrans' goal of fully transitioning the current fleet to zero emissions vehicles will positively impact EJ communities through the reduction of harmful

emissions associated with diesel buses. This Project is a proactive commitment to an equity-first approach to solving health, economic, and transportation barriers, focusing on communities where service improvements and zero emission transit are needed the most.

Benefits:
Emission Zero is vital to meeting the goal of decarbonizing SamTrans bus transit services, supporting the replacement of greenhouse gas emitting diesel buses with zero emission buses in the region.

Benefit Type	Benefit Description
Congestion Reduction	The Project will enable the deployment of SamTrans' first set of 37 battery-electric buses (BEB), including BEBs that will serve the US-101 Express Bus Route EPX (East Palo Alto – San Bruno BART), a new expansion route that will serve San Mateo County's equity priority areas, and provide direct service between key destinations on the US 101 corridor. Route EPX aims to attract current single-vehicle users of US101 to switch from vehicles to transit, removing vehicles from this heavily congested segment of US 101.
Safety	The quieter drivetrain of BEBs, compared to diesel buses, improves the quality of life for bus passengers, other roadway users, and area residents and workers. In addition, qualitatively, an expanded electrical distribution network will allow the BEBs to be charged safely.
Economic development	New route EPX will provide a historically disadvantaged community with access to jobs along the US 101 corridor, as well as better connect that community to the BART system. An estimated 423.8 jobs will be created locally as the result of the Project.
Air quality and Health Impact	This Project, to electrify the SamTrans bus fleet and replace diesel buses as they reach their useful life with zero emission BEBs, will deliver significant reduction in the region's GHG and carbon emissions, reduce fossil fuel consumption, and to provide more efficient and equitable access to sustainable and clean public transportation in San Mateo County region. BEBs emit fewer pollutants than diesel buses using an onboard battery pack to propel the bus instead of burning diesel. This Project is estimated to reduce 820.9 tons of CO2 per year, or an estimated reduction of 16,418 tons of CO2 over 20 years starting in 2027. The 20-year period is consistent with the design life of the charging infrastructure.

Accessibility	The Project will improve regional connectivity to major job and educational centers with zero emission buses for several SB 535 Disadvantage Communities (DACs), AB 1550 (California Climate Investment Priority Populations 2022 CES 4.0), and FTA-designated low-income populations. Bus service deployed from South Base serves routes to the 14 cities of San Mateo County including Daly City, South San Francisco, San Mato, Half Moon Bay, Redwood City, and East Palo Alto, as well as City and County of San Francisco. With nearly 90 percent of SamTrans' riders are low-income, transit dependent customers with limited or no access to a personal vehicle, the Emission Zero Project will target routes serving disadvantaged or historically impacted and marginalized communities. SamTrans will prioritize deployment of its first set of BEB on equity transit route serving both SB 535 and AB 1550 communities, connecting communities to key employment, health, and education centers.
System preservation	Operations and maintenance savings will be realized from this project as the required energy for BEBs costs less, on a per-mile basis, than that required for diesel buses. Similarly, savings are realized in maintaining BEB relative to the cost of maintaining diesel buses on a per-mile basis. The electric charging infrastructure and electrical network as part of the Project scope will be used to charge future electric bus service, including the planned transition of existing diesel regional bus service to electric power. Some of the infrastructure improvements included in the project scope, such as the replacement of existing asphalt with Portland cement concrete and the installation of a new PG&E service main, are expected to have service lifespans that will extend beyond the expected lives of project charging infrastructure or battery/electric buses.
System reliability	The Project enables faster charging time, thus preventing buses from being delayed by charging – this will result in a more the bus service and users can plan effectively around the bus schedule. Additionally, BEBs have superior power at low speeds and lower noise feedback than diesel buses, resulting in the electric buses typically being driven with faster acceleration and higher average speed. These faster speeds can yield travel time savings for passengers, a benefit that has not been monetized in this analysis.

4. DEFICIENCIES

Climate change and particulate pollution are concerns worldwide. The buildup of carbon dioxide (CO2) and other greenhouse gases like methane (CH4), nitrous oxide (N2O), and hydrofluorocarbons (HFCs) is causing the Earth's atmosphere to warm, resulting in changes to the climate we are already starting to see today. According to the United States Environmental Protection Agency (EPA), greenhouse gas (GHG)

emissions from transportation account for about 27 percent of total U.S. GHG emissions, making it the largest contributor of U.S. GHG emissions. California recognizes the need to operate cleaner and greener vehicles. The California Air Resources Board (CARB) has a goal for transit agencies to operate all zero emission vehicles by 2040. This Project is a vital need to propel SamTrans' transition away from diesel buses and meet the CARB goal of a 100% zero emission fleet by 2034, six years ahead of the mandate.

Criteria air pollutants (CAPs) include pollutants that cause smog and acid rain and have been linked to negative health effects. SamTrans' current diesel vehicles emit CAPs when they burn fossil fuels like diesel and gasoline, but they also displace CAPs that otherwise would have been emitted if passengers had chosen to drive alone instead of taking public transit. Approximately 98 percent of the CAPs emitted by SamTrans are from the diesel bus fleet. Nitrogen oxides represent approximately 68 percent of CAPs generated by SamTrans. SamTrans' transition to zero-emission buses such as battery-electric buses, is expected to reduce CAP generation significantly. According to SamTrans Sustainability Report, Energy Use, in FY2019 and FY2020, SamTrans' bus fleet generated approximately 28,508 and 25,704 metric tons of carbon dioxide equivalent (MTCO2e), respectively. SamTrans' Zero-Emissions Fleet Transition Plan, discuss the carbon dioxide equivalent, a metric used to equate the global-warming potential of other gas emissions with an equivalent amount of CO2, for a diesel bus (2.9 CO2 equivalent per mile) compared to that of a BEB (0.6 CO2 equivalent per mile) is significant.

Climate change also profoundly and disproportionately harms vulnerable communities. Reducing behaviors that worsen climate change is foundational to climate resilience and environmental justice. SamTrans' new express bus service and redesign of SamTrans bus network reduces behaviors that worsen climate change by providing attractive alternatives to the single-occupancy vehicle trips that drive on-road emissions.

This Project, to electrify the SamTrans bus fleet and replace diesel buses as they reach their useful life with zero emission BEBs, will deliver significant reduction in the region's GHG and carbon emissions, reduce fossil fuel consumption, and to provide more efficient and equitable access to sustainable and clean public transportation in San Mateo County region.

5. CORRIDOR AND SYSTEM COORDINATION

The Project is located entirely on SamTrans owned property and right-of-way. The Project will not affect the operation of any rail companies. With that said, many of SamTrans bus routes do offer connections to Caltrain, a commuter railroad between the cities of San Francisco and San Jose. For this reason, SamTrans regularly coordinates with Caltrain on schedule synchronization to provide faster and more efficient transit service.

6. ALTERNATIVES

Not Applicable/None

7. COMMUNITY INVOLVEMENT

SamTrans has conducted various community engagement and outreach to better understand the needs of residents and transit users in San Mateo County, and the potential for them to shift modes given the opportunity. The Project is a proactive commitment to support an equity-first approach to solving health, economic, and transportation barriers, focusing on where service improvements and zero emission transit are needed the most.

In anticipation of the start of construction, SamTrans will begin engaging with the community on project construction and maintain communications during the construction phase. Prior to the start of active construction, SamTrans will develop plans to mitigate possible project impacts including truck traffic, noise, and dust, and will fully inform community members and project stakeholders within up to a mile radius of the Project details, possible impacts and mitigation plans. Stakeholders could include but are not limited to nearby businesses, residences, the San Carlos Airport, as well as San Mateo County and the cities of San Carlos and Redwood City. In addition, Project materials will be made available in multiple languages - materials based on the languages in the area. A dedicated SamTrans team will work to address concerns that arise and continue to keep the community and project stakeholders informed throughout construction.

Additionally, successful delivery of Emission Zero requires communication, collaboration, and partnership with labor unions to ensure the Project will support creating good paying jobs to the community. SamTrans will partner with the International Brotherhood of Teamsters Local 856 and Amalgamated Transit Union Local 1574 to develop a training program to reskill the current workforce. SamTrans will also seek help from the San Mateo County Electrical Joint Apprenticeship & Training Center, sponsored by the International Brotherhood of Electrical Workers Local Union 617, to train and recruit new employees in the Bay Area region.

8. ENVIRONMENTAL COMPLIANCE

California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA)

The Project received environmental clearance on December 7, 2022. SamTrans prepared an Initial Study (IS) of the possible environmental effects of the Project. The IS concluded that the Project would not have a significant effect on the environment and therefore prepared a Negative Declaration. The 21-day public review period of the Draft IS/ND commenced on September 15, 2022 and ended on October 6, 2022. SamTrans did not receive any comments during the comment period, resulting in no

changes in the conclusion of the Draft IS/ND. On December 7, 2022, the San Mateo County Transit District Board of Directors adopted the Negative Declaration under the California Code of Regulations, Title 14, Guidelines for Implementation of CEQA, Section 15164.

The Federal Transit Administration (FTA) Region 9 environmental specialists completed their review of the Categorial Exclusion (CE) Checklist for the Project. The FTA concluded on June 20, 2023, the CE Checklist and supporting documentation are consistent with the criteria associated with a categorical exclusion. The FTA determined that the Project qualifies as a categorical exclusion under CE (c)(7) "Acquisition, installation, rehabilitation, replacement, and maintenance of vehicles or equipment, within or accommodated by existing facilities, that does not result in a change in functional use of the facilities".

9. FUNDING, PROGRAMMING AND ESTIMATE

Funding:
The total Project cost estimate is $36,605,000. The Project is currently funded locally through the PS&E phase. The Project construction cost estimate is $29,648,000. The Project was approved for award of the 2022 Local Partnership Competitive Program (LPP-C) funding for construction in the amount of $14,824,000 at the June 2023 California Transportation Commission (CTC) meeting. The LPP-C funds will leverage a combination of local sales tax and federal funds committed for the construction phase. It has been determined that this project is eligible for Federal-aid funding.

Funding by Phases (Thousands)

Funding Source	Project Phases				Total	Fiscal Year of Allocation
	PA&ED	PS&E	R/W	Construction		
Local Sales Tax	$481	$2,476	NA	$0	$2,957	2021
Local Sales Tax	$0	$0	NA	$1,524	$1,524	2024
Federal	$0	$0	NA	$8,700	$8,700	2024
State LCTOP	$0	$0	NA	$4,600	$4,600	2022
2022 LPP-C Awarded	$0	$0	$0	$14,824	$14,824	2024
Project Total Cost	$481	$2,476	$0	$29,648	$32,605	

Programming:

See attached copy of Electronic Project Programming Request (ePPR).

Project Cost Estimate

South Base 37 Battery Electric Bus Infrastructure				**Design Level: 35% Design**	
Revised: 09/07/23				**Estimated By: Nasser Haghtalab**	
Item	**Quantity**	**Unit**	**Unit Price**	**Amount**	**Subtotal**
DESIGN					
Design Admin	0.6%	x	CCE	$145,000	
Program Management	1.0%	x	CCE	$255,000	
Design - 35% to Final PS&E	5.6%	x	CCE	$1,410,000	
Independent Peer Reviews	1.0%	x	CCE	$250,000	
Design Contingency	1.7%	x	CCE	$416,000	
Sum	***9.9%***			***Design Soft Cost***	**$ 2,476,000**

PROJECT APPROVAL & ENVIRONMENTAL DOCUMENT (PA&ED)					
Admin	0.6%	x	CCE	$159,000	
Program Management	1.0%	x	CCE	$241,000	
Contingency	0.3%	x	CCE	$81,000	
Sum	***1.9%***			***Environmental Soft Costs***	**$ 481,000**

CONSTRUCTION CONTRACT ESTIMATE					
Site Preparation for Electrical Distribution System	1	LS	$938,000	$938,000	
Procurement & Installation of Electrical and Charging Equipment and Structure	1	LS	$16,694,000	$16,694,000	
Paving - Bus Charging Bays	1	LS	$2,183,000	$2,183,000	
Test & Commissioning Charging Infrastructure	1	LS	$949,000	$949,000	
Project Close Out	1	LS	$163,000	$163,000	
				Base CONSTRUCTION CONTRACT ESTIMATE (BCCE)	$20,927,000
Construction Contingency	20.0%	x	BCCE	$4,185,000	
				CONSTRUCTION CONTRACT ESTIMATE (CCE)	**$25,112,000**

ANCILLARY CONSTRUCTION and CLOSE OUT COSTS					
Construction Admin	0.9%	x	CCE	$221,000	
Construction Prog. Mgmt.	1.5%	x	CCE	$382,000	
Design Support During Construction	3.0%	x	CCE	$753,000	
Construction Management	6.5%	x	CCE	$1,632,000	
Test and Commissioning Support	3.1%	x	CCE	$791,000	
Contingency	3.0%	x	CCE	$757,000	
Sum	**18.1%**			**ANCILLARY CONSTRUCTION COSTS**	**$4,536,000**
TOTAL Soft Costs	***29.8% CCE***				$7,493,000
				TOTAL PROJECT COST ESTIMATE (TPCE)	**$32,605,000**

COST ESCALATION - See Note*				
Year of Expenditure*	TPCE Annual Escalation %	TPCE Cumulative Escalation %	Expenditure per Year	Escalation Subtotals*
FY24 (7/23 through 6/24) - 35% to Final Design and PA&ED	0.0%	0.0%	2,957,000	$ 0
FY25 - (7/24 through 6/25) Pre Construction	0.0%	0.0%	558,750	$ 0
FY26 - (7/25 through 6/26) Year 1 Construction	5.66%	5.7%	17,453,550	$ 987,871
FY27 - (7/26 through 6/27) Year 2 Construction	5.16%	10.8%	10,181,238	$ 1,101,610
FY28 - (7/27 through 10/27) Close out	4.66%	15.5%	1,454,463	$ 225,151
			TOTAL COST ESCALATION	$ 2,314,632
			PROJECT COST IN YEAR OF EXPENDITURE DOLLARS	**$ 34,919,632**

Note*: 5.66%, 2023 escalation rate based on ENR CCI 5-year average (2018-2023) for San Francisco (https://www.enr.com/economics/historical_indices/SanFrancisco)

10. DELIVERY SCHEDULE

Project Milestones	Milestone Dates
Program Project	01/01/2020
Begin Environmental	11/01/2021
PA&ED (End Environmental Phase)	06/20/2023
Project PS&E (Begin Design Phase)	02/01/2023
Ready To List (End Design Phase)	06/30/2024
Contract Award (Begin Construction Phase)	10/15/2024
Contract Acceptance (End Construction Phase)	10/31/2026
Begin Project Closeout	11/30/2026
Final Project Closeout	05/31/2027

11. RISKS

The Project is not at risk for schedule delays due to land acquisitions or complicated utility relocations as all work will be performed within the SamTrans-owned South Base Maintenance and Operations Facility. Preliminary engineering is complete, and CEQA and NEPA clearances are obtained.

Potential schedule risks that could arise due to constructability issues and design-related change orders during construction would be mitigated by the CMGC project delivery method because of the following:

- Collaboration among SamTrans, the design consultant, and the CMGC during the design phase will help address constructability concerns before the start of construction, thereby decreasing the potential for constructability delays.
- Input from the CMGC during the design phase will help eliminate design errors, which would reduce or even eliminate design-related change orders.

The transition to a battery-electric fleet requires partnership with Pacific Gas & Electric (PG&E), SamTrans' main electricity providers in the area. Potential schedule risks is mitigated through early partnership and collaboration with PG&E and will continue throughout the PS&E phase. The Project Management team and PG&E have had several meetings and scheduled site walks to discuss scope and identify PG&E power supply options and points of connection. PG&E is committed to working with SamTrans as partners to advance each other's goals in shrinking our carbon footprint and adapting to changing climate conditions.

12. EXTERNAL AGENCY COORDINATION

Federal Transit Administration (FTA)

The FTA Region 9 environmental specialists completed their review of the Categorial Exclusion (CE) Checklist for the Project. The FTA determined that the Project

qualifies as a categorical exclusion under CE (c)(7) "Acquisition, installation, rehabilitation, replacement, and maintenance of vehicles or equipment, within or accommodated by existing facilities, that does not result in a change in functional use of the facilities".

The Project is not a "Project of Division Interest".

13. PROJECT PERSONNEL

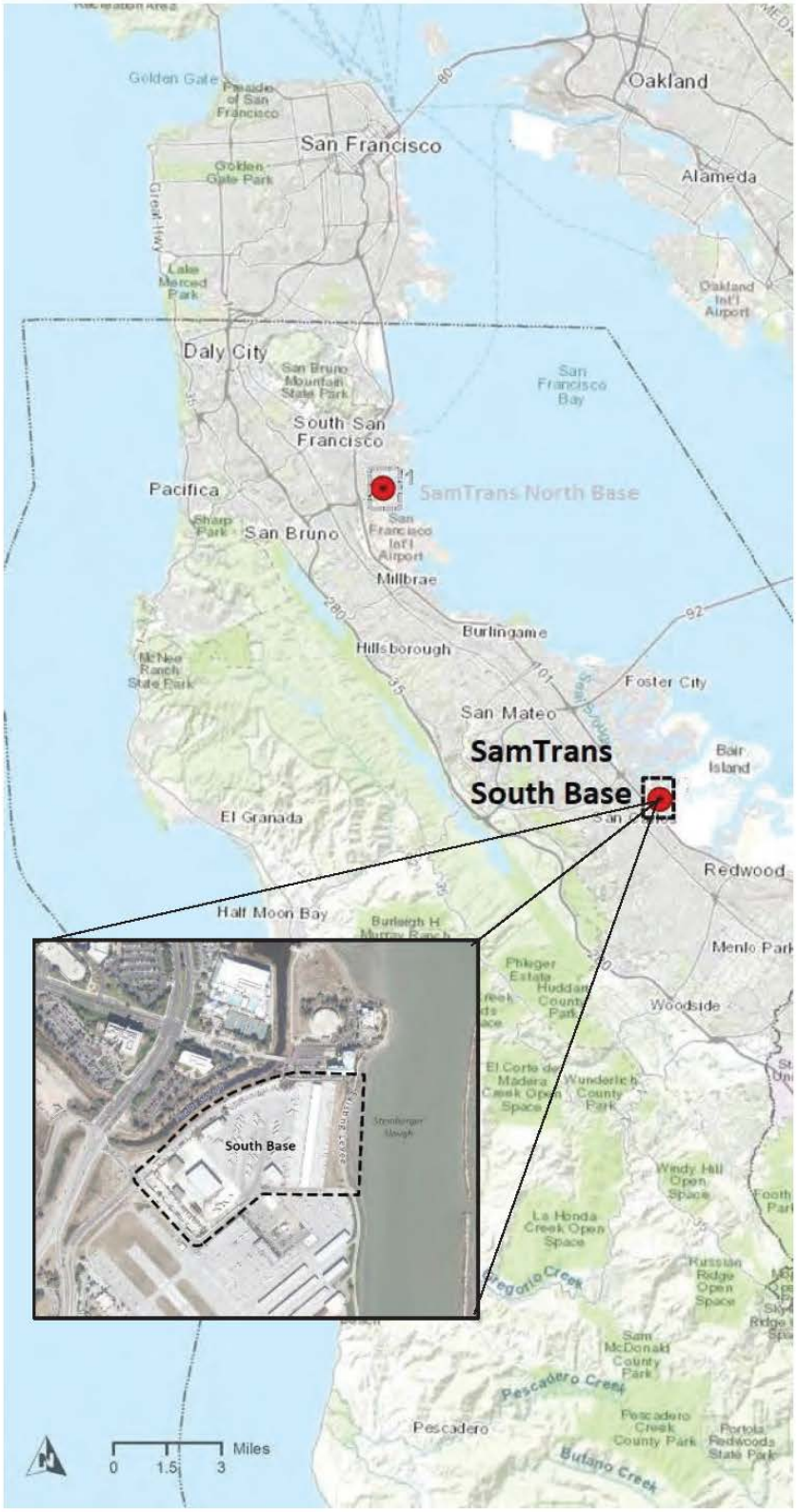
SamTrans has identified a Project Management Team, (PMT), led by Liria Larano, SamTrans' Deputy Chief, Fleet and Facility Infrastructure. The PMT is responsible for managing the design, construction and testing phases of the project, including oversight of the work performed by the design consultant and CM. The PMT will work collaboratively with stakeholders, including SamTrans bus operators and maintenance personnel, to minimize disruption to ongoing bus operations at South Base during construction and will oversee integrated testing of the new equipment before the infrastructure is placed in service. Under the CMGC method, the PMT will deliver an optimal design, manage costs and share risks, and delivery project on-time. SamTrans will always maintain control of the Project to identify, analyze, and solve risks before they impact the Project.

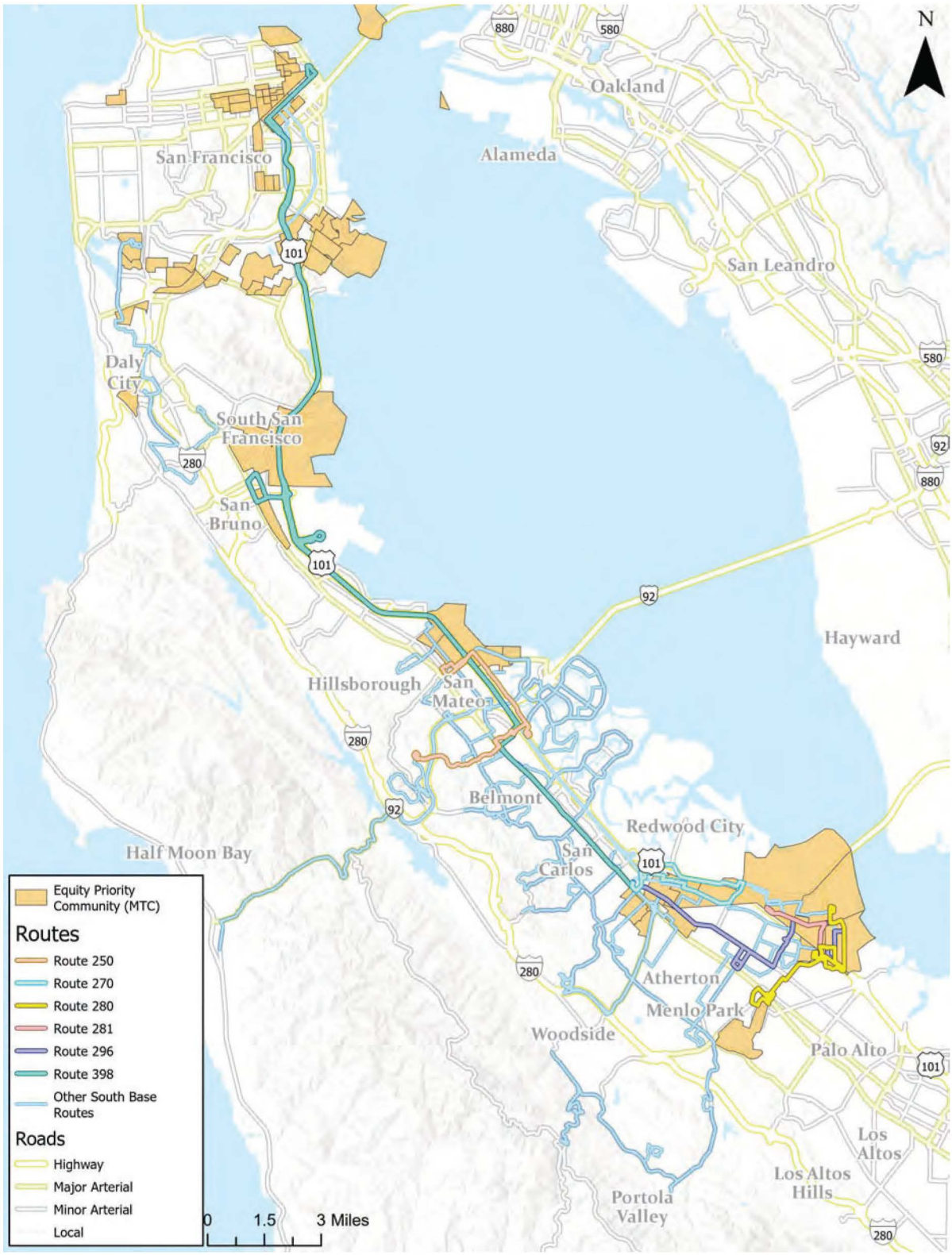
Liria Larano, Deputy Chief, Fleet and Facility Infrastructure
Phone: (650) 622-7828
Email: laranol@samtrans.com

14. ATTACHMENTS

A. Location Map
B. Electronic Project Programming Request (ePPR)

Attachment A – Location Map





South Base Routes serving Equity Priority Communities as designated by MTC.
MTC Equity Priority Communities survey tracts within Urbanized area based on eight (8) demographic variables, including People of Color, Low-Income, Limited English Proficiency, Senior 75 years and older, Zero-Vehicle Households, Single Parent Families, People with Disability, and Rent-Burdened Households.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6014-2023-0001 v0.1

Amendment (Existing Project) ☐ YES ☒ NO						Date	09/19/2023 09:54:27
Programs ☒ LPP-C	☐ LPP-F	☐ SCCP	☐ TCEP	☐ STIP	☐ Other		
District	EA	Project ID	PPNO	Nominating Agency			
04				San Mateo County Transit District			
County	Route	PM Back	PM Ahead	Co-Nominating Agency			
San Mateo County	U						
				MPO	Element		
				MTC	Mass Transit (MT)		
Project Manager/Contact			Phone	Email Address			
Lisha Mai			650-508-6353	mail@samtrans.com			

Project Title

SamTrans Emission Zero Project

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

The proposed electric charging infrastructure is located at SamTrans' South Base Maintenance Facility (South Base), located in the City of San Carlos, San Mateo County, the bus network at South Base serves routes to the 14 cities of San Mateo County. The Project will construct core transit infrastructure improvements at SamTrans' bus facility. The Project scope includes infrastructure required for the first set of SamTrans' zero-emission buses, including construction of electrical charging infrastructure and bus charging bays, procurement and installation of overhead pantograph charging dispenser, and construction of an electrical power distribution network that is scalable for future BEB expansion. Charging infrastructure for thirty-seven BEBs is proposed under this Project to enable successful deployment and safe operations of SamTrans' new fleet of 40-foot BEBs to be delivered by 2025.

Component	Implementing Agency
PA&ED	San Mateo County Transit District
PS&E	San Mateo County Transit District
Right of Way	San Mateo County Transit District
Construction	San Mateo County Transit District

Legislative Districts					
Assembly:	19,22,12	Senate:	8,13	Congressional:	12,15

Project Milestone	Existing	Proposed
Project Study Report Approved	01/01/2020	
Begin Environmental (PA&ED) Phase		11/01/2021
Circulate Draft Environmental Document Document Type (ND/MND)/CE		09/01/2022
Draft Project Report		12/30/2022
End Environmental Phase (PA&ED Milestone)		06/20/2023
Begin Design (PS&E) Phase		02/01/2023
End Design Phase (Ready to List for Advertisement Milestone)		06/30/2024
Begin Right of Way Phase		02/01/2023
End Right of Way Phase (Right of Way Certification Milestone)		03/31/2024
Begin Construction Phase (Contract Award Milestone)		10/15/2024
End Construction Phase (Construction Contract Acceptance Milestone)		10/31/2026
Begin Closeout Phase		11/30/2026
End Closeout Phase (Closeout Report)		05/31/2027

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6014-2023-0001 v0.1

Date 09/19/2023 09:54:27

Purpose and Need

The SamTrans' Emission Zero Project will implement core infrastructure improvements to support charging of SamTrans' zero emission bus fleet called for in SamTrans' Innovative Clean Transit (ICT) Rollout Plan and the Zero-Emission Fleet Transition Plan. The SamTrans Emission Zero Project (Project) is integral to meet the goal of decarbonizing SamTrans bus transit services. The Project will bring to fruition benefits from capital, operating, and planning investments already made, which include acquisition of 37 battery-electric buses (BEB) with Transit Signal Priority equipment, workforce training and development, network improvements under Reimagine SamTrans, and the upcoming launch of zero emissions express bus service. The Project is essential to increasing ridership, reducing greenhouse gas (GHG) emissions, improving operational performance, strengthening transit connectivity to jobs and housing hubs, and improving transportation equity by prioritizing the delivery of zero emission technology and service to disadvantage communities and low-income communities. Additionally, improvements will allow SamTrans to catalyze future expansion of its BEB fleet, replacing the need for diesel buses on SamTrans' network. This project represents smart, strategic integrated investments to help reduce carbon pollution and strengthen the economy while maximizing returns on public investments.

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
Facilities	Facility Improvement	EA	1
Rail/ Multi-Modal	Rail/Transit Equipment	EA	37

Additional Information

Emission Zero is integral to meet the goal of decarbonizing SamTrans bus transit services. The project will enable the deployment of SamTrans' first set of 37 battery-electric buses (BEB), including BEBs that will serve the US-101 Express Bus Route EPX (East Palo Alto – San Bruno BART), a new expansion route that will serve San Mateo County's equity priority areas, providing direct service between key destinations on the US 101 corridor. In addition, the Project will enable SamTrans to catalyze its broader deployment of future BEBs, replacing the need for diesel buses on SamTrans' network and fully implement improvements identified through Reimagine SamTrans, a comprehensive operational analysis that evaluated the SamTrans bus system and developed a new network.

PPR ID
ePPR-6014-2023-0001 v0.1

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPC, SCCP, LPPF	Change in Daily Vehicle Miles Travelled	Miles	0	0	0
			VMT per Capita	13,323,149.1	13,324,941.1	-1,792
	LPPC, SCCP, LPPF	Person Hours of Travel Time Saved (Only 'Change' required)	Person Hours	420,816.1	422,398.3	-1,582.2
			Hours per Capita	0	0	0
System Reliability (Freight)	LPPC, SCCP, LPPF	Peak Period Travel Time Reliability Index (Only 'No Build' Required)	Index	0	0	0
	LPPC, SCCP, LPPF	Level of Transit Delay (if required)	% "On-time"	0	0	0
Air Quality & GHG (only 'Change' required)	LPPC, SCCP, TCEP, LPPF	Particulate Matter	PM 2.5 Tons	0	0	0
			PM 10 Tons	0	0	0
	LPPC, SCCP, TCEP, LPPF	Carbon Dioxide (CO2)	Tons	0	820.9	-820.9
	LPPC, SCCP, TCEP, LPPF	Volatile Organic Compounds (VOC)	Tons	0	0	0
	LPPC, SCCP, TCEP, LPPF	Sulphur Dioxides (SOx)	Tons	0	0	0
	LPPC, SCCP, TCEP, LPPF	Carbon Monoxide (CO)	Tons	0	3.6	-3.6
	LPPC, SCCP, TCEP, LPPF	Nitrogen Oxides (NOx)	Tons	0	0.7	-0.7
Safety	LPPC, SCCP, TCEP, LPPF	Number of Fatalities	Number	0.07392	0.07393	-0.00001
	LPPC, SCCP, TCEP, LPPF	Fatalities per 100 Million VMT	Number	0.005	0.005	0
	LPPC, SCCP, TCEP, LPPF	Number of Serious Injuries	Number	0.27818	0.27822	-0.00004
	LPPC, SCCP, TCEP, LPPF	Number of Serious Injuries per 100 Million VMT	Number	0.28	0.28	0
Economic Development	LPPC, SCCP, TCEP, LPPF	Jobs Created (Only 'Build' Required)	Number	423.8	0	423.8
Cost Effectiveness (only 'Change' required)	LPPC, SCCP, TCEP, LPPF	Cost Benefit Ratio	Ratio	1.46	0	1.46
Vehicle Volume	LPPC, LPPF, SCCP	Existing Average Annual Vehicle Volume on Project Segment	Number	0	0	0
	LPPC, LPPF, SCCP	Estimated Year 20 Average Annual Vehicle Volume on Project Segment with Project	Number	0	0	0

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6014-2023-0001 v0.1

District	County	Route	EA	Project ID	PPNO
04	San Mateo County				

Project Title

SamTrans Emission Zero Project

Existing Total Project Cost ($1,000s)									
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Implementing Agency
E&P (PA&ED)									San Mateo County Transit District
PS&E									San Mateo County Transit District
R/W SUP (CT)									San Mateo County Transit District
CON SUP (CT)									San Mateo County Transit District
R/W									San Mateo County Transit District
CON									San Mateo County Transit District
TOTAL									
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)	481							481	
PS&E	2,476							2,476	
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		29,648						29,648	
TOTAL	2,957	29,648						32,605	

Fund #1:	Local Funds - SAMTRANS Revenue (Committed)								Program Code
Existing Funding ($1,000s)									
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)									San Mateo County Transit District
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)	481							481	
PS&E	2,476							2,476	
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		7,317						7,317	
TOTAL	2,957	7,317						10,274	

Fund #2:	FTA Funds - FTA5307 - Urbanized Area Formula Program (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)									Metropolitan Transportation Commiss
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL									
	Proposed Funding ($1,000s)								Notes
E&P (PA&ED)									Zero Emission Bus (ZEB)
PS&E									Infrastructure Set-Aside Program
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		2,907						2,907	
TOTAL		2,907						2,907	

Fund #3:	Other State - Low Carbon Transit Operations Program (LCTOP) (Committed)								Program Code
	Existing Funding ($1,000s)								
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)									Caltrans District 4
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		4,600						4,600	
TOTAL		4,600						4,600	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6014-2023-0001 v0.1

Fund #4:	State SB1 LPP - Local Partnership Program - Competitive program (Uncommitted)								Program Code
Existing Funding ($1,000s)									
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)									California Transportation Commissio
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		14,824						14,824	
TOTAL		14,824						14,824	

APPENDIX II - Performance Metrics Form

Performance Metrics Form

Measure	Metric	Build	Future No Build	Change	Increase or Decrease
Congestion Reduction	Daily Vehicle Miles Travelled	11,144,718.0 miles per day (2017); **13,323,149.1** miles per day (2040)	11,146,510.0 miles per day (2017); **13,324,941.1** miles per day (2040)	-1,792.0 miles per day (2017); **-1,792.0 miles per day** (2040)	**Decrease**
	Person Hours of Travel Time	**420,816.1** person-hours per day (2040)	**422,398.3** person-hours per day (2040)	**-1,582.2 person-hours per day** (2040)	**Decrease**
Safety	Number of Fatalities	**0.07392** fatalities average annual (2040)	**0.07393** fatalities average annual (2040)	**-0.00001 fatalities average annual** (2040)	**Decrease**
	Number of Serious Injuries	**0.27818** severe injuries average annual (2040)	**0.27822** severe injuries average annual (2040)	**-0.00004 severe injuries average annual** (2040)	**Decrease**
	Rate of Fatalities	**0.005** fatal crashes per MVMT (2040)	**0.005** fatal crashes per MVMT (2040)	**0.000 fatal crashes per MVMT** (2040)	**No Change**
	Rate of Serious Injuries	**0.280** injury crashes per MVMT (2040)	**0.280** injury crashes per MVMT (2040)	**0.000 injury crashes per MVMT** (2040)	**No Change**
Economic Development	Jobs Created	**423.8 jobs** over the years of construction	**0.0 jobs** over the years of construction	**423.8 jobs over the years of construction**	**Increase**
Air Quality	Particulate Matter (PM 2.5 PM 10)	**0** tons PM 2.5 on average per year; **0** tons PM 10 on average per year	**0** tons PM 2.5 on average per year; **0** tons PM 10 on average per year	**0 tons PM 2.5 on average per year; 0 tons PM 10 on average per year**	**No Change**
	Carbon Dioxide (CO2)	**0** tons CO2 on average per year	**820.9** tons CO2 on average per year	**-820.9 tons CO2 on average per year**	**Decrease**
	Volatile Organic Compounds (VOC)	**0** tons VOC on average per year	**0** tons VOC on average per year	**0 tons VOC on average per year**	**No Change**
	Sulphur Dioxides (SOx)	**0** tons SOX on average per year	**0** tons SOX on average per year	**0 tons SOX on average per year**	**No Change**
	Carbon Monoxide (CO)	**0** tons CO on average per year	**3.6** tons CO on average per year	**-3.6 tons CO on average per year**	**Decrease**
	Nitrogen Oxides (NOx)	**0** tons NOx on average per year	**0.7** tons NOx on average per year	**-0.7 tons NOx on average per year**	**Decrease**
Cost Effectiveness	Benefit Cost Ratio			**1.46**	N/A

APPENDIX II - Performance Metrics Form

Accessibility	Number of Jobs Accessible by Mode	**224.9** potentially low income passengers benefiting from the new route per day	**0.0** potentially low income passengers benefiting from the new route per day	**224.9** potentially low income passengers benefiting from the new route per day	**Increase**
	Access to Key Destinations by Mode				
	Percent of Population Defined as Low Income or Disadvantaged within 1/2 mile of rail station, ferry terminal, or high-frequency bus stop				
System Preservation (Pavement and Bridge Rehabilitation Only)	Pavement Condition Index				N/A
	Bridge Condition Rating for Bridge Deck, Superstructure, Substructure				N/A
Noise Level Sound walls Only (For reporting only)	Number of Receptors				N/A
	Properties Directly Benefited				N/A
	Number of Decibels				N/A
Throughput	Bicyclist and Pedestrian Screen Line Counts (Optional)				N/A
System Reliability	Peak Period Travel Time Reliability Index				N/A
	Level of Transit Delay				N/A

APPENDIX III - Performance Metrics Form Back-up

Metric Name	Daily Vehicle Miles Travelled
Source Data	Cal-B/C Corridor model Cal-B/C Sketch model

Base Numbers & Calculation for "No Build" Estimate

- '1) Project Information' tab, cell N35 AADT annual growth: 0.78% (calculated based on https://dot.ca.gov/programs/sustainability/sb-743/california-vmt-data)
- '1) Project Information' tab, cells N37:N38: No-Build AADT (2017): 230,000 and 213,200 vehicles per day
- '1) Project Information' tab, cells N40:N41: No-Build AADT (2040): 230,000*(1+0.0078)^(2040-2017) = 274,971 vehicles per day (one direction)
  213,200*(1+0.0078)^(2040-2017) = 254,886 vehicles per day (the other direction)
- '1) Project Information' tab, cell N46: Highway Model Group No-Build VMT (2040):
  (274,971 vehicles/day AADT one direction + 254,886 vehicles/day AADT the other direction) * 51 miles Route 2 Express length * 13 hours per day duration of Route service / 24 hours per day number of hours per day = 14,637,280 VMT per day (2040)
- '1) Project Information' tab, cell N27 Percent trucks: 9% (Cal-B/C Sketch Default)
- '1) Project Information' tab, cell N49: Highway Model Group No-Build VMT (2040):
  13,319,925 VMT per day (2040) * (1-0.09) = 13,319,925 cars only VMT per day (13 hours out of 24).
- '1) Project Information' tab, cells N67:N70 daily VMT for routes 3, 6, 8, and 12: 1,176, 2,112, 1,224, and 504 VMT per day
- '2) Model Inputs' tab, cell W68 TOTAL VMT: 13,319,925 VMT per day + 1,176 VMT per day + 2,112 VMT per day + 1,224 VMT per day + 504 VMT per day = 13,324,941 VMT per day (2040) No Build

Base Numbers, Trends or Assumptions, and Calculation for "Build" Number

- 'Route 2 Data' tab, cell Z5 Mileage per day (Route 2): 1,989 VMT per day
- '1) Project Information' tab, cell N31 Percent of new riders switching from cars: 30%
- '1) Project Information' tab, cell N25 Vehicle occupancy for passenger cars: 1.30 persons per car
- '1) Project Information' tab, cell N51 Number of passengers per bus (Route 2 Express): 8.24 persons per bus
- '2) Model Inputs' tab, cell Y81 Passenger Miles Traveled (PMT) for Model Group 9: 1,989 * 8.24 = 16,384 PMT per day
- '2) Model Inputs' tab, cell W73 VMT for Model Group 1: 13,324,941 VMT per day (2040) No Build – (16,384 PMT per day * 30% / 1.30 persons per car) = 13,316,144 VMT per day
- '2) Model Inputs' tab, cell W93 TOTAL VMT: 13,316,144 VMT per day + 1,989 VMT per day + 1,176 VMT per day + 2,112 VMT per day + 1,224 VMT per day + 504 VMT per day = 13,323,149 VMT per day (2040) Build

Change

- **13,323,149 VMT per day (2040) Build - 13,324,941 VMT per day (2040) No Build = - 1,792 VMT per day Change**

APPENDIX III - Performance Metrics Form Back-up

Metric Name	Person Hours of Travel Time
Source Data	Cal-B/C Corridor model Cal-B/C Sketch model

Base Numbers & Calculation for "No Build" Estimate

- '1) Project Information' tab, cell N25 Vehicle occupancy for passenger cars: 1.30 persons per car
- '1) Project Information' tab, cell N49 Highway Model Group No-Build VMT (2040): 13,319,925 cars only VMT per day (13 hours out of 24)
- '2) Model Inputs' tab, cells W51:W84 Bus routes 3, 6, 8, and 12 VMT (2040): 1,176 VMT per day, 2,112 VMT per day, 1,224 VMT per day, and 504 VMT per day
- '1) Project Information' tab, cells N74:N77 Bus routes 3,6, 8, and 12 number of passengers per bus: 20.1, 27.7, 15.9, and 48.8 persons per bus
- '1) Project Information' tab, cell N72 Bus Speed: 30 miles per hour
- '1) Project Information' tab, cell N58 No-Build Highway speed (full day average) in 2040: 41.41 miles per hour (based on free flow speed of 45, and the following Cal-B/C Sketch Methodology parameters:
    - Maximum V/C Ratio: 1.56
    - Alpha: 0.20
    - Beta: 10
    - Capacity (vehicles per hour per lane, vphpl)
- 13,319,925 VMT per day / 41.41 miles per hour * 1.30 persons per car = 321,683 hours per day * 1.30 persons per car = 418,188 person-hours per day (cars only)
- (1,176 VMT * 20.1 persons per bus + 2,112 VMT * 27.7 persons per bus + 1,224 VMT * 15.9 persons per bus + 504 VMT * 48.8 persons per bus) / 30 miles per hour = 4,210 passenger hours traveled (PHT) per day (buses)
- 418,188 person-hours per day + 4,210 passenger hours traveled per day = 422,398 person hours of travel time per day (2040) No Build.

Base Numbers, Trends or Assumptions, and Calculation for "Build" Number

- '1) Project Information' tab, cell N25 Vehicle occupancy for passenger cars: 1.30 persons per car
- '2) Model Inputs' tab, cell W73 Highway Model Group Build VMT (2040): 13,316,144 cars only VMT per day (13 hours out of 24)
- '2) Model Inputs' tab, cell W81:W85 Bus routes 2, 3, 6, 8, and 12 VMT (2040): 1,989 VMT per day 1,176 VMT per day, 2,112 VMT per day, 1,224 VMT per day, and 504 VMT per day
- '1) Project Information' tab, cells N51, N74:N77 Bus routes 2, 3,6, 8, and 12 number of passengers per bus: 8.2, 20.1, 27.7, 15.9, and 48.8 persons per bus
- '1) Project Information' tab, cell N72 Bus Speed: 30 miles per hour
- '1) Project Information' tab, cell N64 Build Highway speed (full day average) in 2040: 41.61 miles per hour
- 13,316,144 VMT per day / 41.61 miles per hour * 1.30 persons per car = 320,046 hours per day * 1.30 persons per car = 416,060 person-hours per day (cars only)
- (1,989 VMT * 8.2 persons per bus + 1,176 VMT * 20.1 persons per bus + 2,112 VMT * 27.7 persons per bus + 1,224 VMT * 15.9 persons per bus + 504 VMT * 48.8 persons per bus) / 30 miles per hour = 4,756 passenger hours traveled (PHT) per day (buses)

• 416,060 person-hours per day + 4,756 passenger hours traveled per day = 420,816 person hours of travel time per day (2040) Build.
Change
• **420,816 person hours of travel (2040) Build – 422,398 person hours of travel (2040) No Build = -1,582 person hours of travel.**

Metric Name	Number of Fatalities
Source Data	Cal-B/C Corridor model
Base Numbers & Calculation for "No Build" Estimate	
• PARAMETERS tab, cell E77 "StateFatRate" Statewide Fatal Crash Rate: 0.005 fatal crashes per million vehicle-miles (MVMT) • PARAMETERS tab, cell BC26 Average Number of Fatalities per Fatal Crash: 1.11 events per crash • '2) Model Inputs' tab, cell BA68 TOTAL No Build VMT (2040): 13,319,925 (excludes bus routes 3, 6, 8, 12) • '2) Model Inputs' tab, cell BE68 TOTAL Number of Fatal Crashes (2040): 13,319,925*0.005 = 0.0666 fatal crashes per year • Number of fatalities: 0.0666*1.11 = 0.07393 fatalities per year (2040)	
Base Numbers, Trends or Assumptions, and Calculation for "Build" Number	
• PARAMETERS tab, cell E77 "StateFatRate" Statewide Fatal Crash Rate: 0.005 fatal crashes per million vehicle-miles (MVMT) • PARAMETERS tab, cell BC26 Average Number of Fatalities per Fatal Crash: 1.11 events per crash • '2) Model Inputs' tab, cell BA93 TOTAL Build VMT (2040): 13,316,144 + 1,989 = 13,318,133 (excludes bus routes 3, 6, 8, 12) • '2) Model Inputs' tab, cell BE68 TOTAL Number of Fatal Crashes (2040): 13,316,144*0.005 = 0.0666 fatal crashes per year • Number of fatalities: 0.0666*1.11 = 0.07392 fatalities per year (2040)	
Change	
• **0.07392 – 0.07393 = -0.00001 fatalities average annual (2040)**	

Metric Name	Rate of Fatalities
Source Data	Cal-B/C Corridor model
Base Numbers & Calculation for "No Build" Estimate	
• PARAMETERS tab, cell E77 "StateFatRate" Statewide Fatal Crash Rate: 0.005 fatal crashes per million vehicle-miles (MVMT)	
Base Numbers, Trends or Assumptions, and Calculation for "Build" Number	
• No Change from No Build	
Change	
• No Change	

APPENDIX III - Performance Metrics Form Back-up

Metric Name	Number of Serious Injuries
Source Data	Cal-B/C Corridor model
Base Numbers & Calculation for "No Build" Estimate	
• PARAMETERS tab, cell E78 "StateInjRate" Statewide Injury Crash Rate: 0.28 injury crashes per million vehicle-miles (MVMT) • PARAMETERS tab, cell BC33 Average Number of Injuries per Fatal Crash: 0.95 events per crash • PARAMETERS tab, cell BC34 Average Number of Injuries per Injury Crash: 1.44 events per crash • PARAMETERS tab, cell BC12 Percent of Severe Injuries among all injuries: 5.12 percent • '2) Model Inputs' tab, cell BA68 TOTAL No Build VMT (2040): 13,319,925 (excludes bus routes 3, 6, 8, 12) • '2) Model Inputs' tab, cell BE68 TOTAL Number of Fatal Crashes (2040): 13,316,144*0.005 = 0.0666 fatal crashes per year • '2) Model Inputs' tab, cell BF68 TOTAL Number of Injury Crashes (2040): 13,319,925*0.28 = 3.7296 injury crashes per year • Number of injuries: (0.0666*0.95 + 3.7296*1.44)*5.12% = 0.2721 serious injuries per year (2040)	
Base Numbers, Trends or Assumptions, and Calculation for "Build" Number	
• PARAMETERS tab, cell E78 "StateInjRate" Statewide Injury Crash Rate: 0.28 injury crashes per million vehicle-miles (MVMT) • PARAMETERS tab, cell BC33 Average Number of Injuries per Fatal Crash: 0.95 events per crash • PARAMETERS tab, cell BC34 Average Number of Injuries per Injury Crash: 1.44 events per crash • PARAMETERS tab, cell BC12 Percent of Severe Injuries among all injuries: 5.12 percent • '2) Model Inputs' tab, cell BA68 TOTAL No Build VMT (2040): 13,316,144 + 1,989 = 13,318,133 (excludes bus routes 3, 6, 8, 12) • '2) Model Inputs' tab, cell BE68 TOTAL Number of Fatal Crashes (2040): 13,318,133*0.005 = 0.0666 fatal crashes per year • '2) Model Inputs' tab, cell BF68 TOTAL Number of Injury Crashes (2040): 13,318,133*0.28 = 3.7291 injury crashes per year • Number of injuries: (0.0666*0.95 + 3.7291*1.44)*5.12% = 0.2718 serious injuries per year (2040)	
Change	
• **0.2718 – 0.2721 = -0.00004 severe injuries average annual (2040)**	

Metric Name	Rate of Serious Injuries
Source Data	Cal-B/C Corridor model
Base Numbers & Calculation for "No Build" Estimate	
• PARAMETERS tab, cell E78 "StateInjRate" Statewide Fatality Crash Rate: 0.28 injury crashes per million vehicle-miles (MVMT) • PARAMETERS tab, cell BC12 Percent of Severe Injuries among all injuries: 5.12 percent • 0.28 * 5.12% = 0.014336 serious injury crashes per MVMT	

Base Numbers, Trends or Assumptions, and Calculation for "Build" Number
• No Change from No Build
Change
• No Change

Metric Name	Jobs Created
Source Data	Method 1 from Senate Bill 1 (SB1) Technical Performance Measurement Methodology Guidebook: *"The FHWA Employment Impacts of Highway Infrastructure Investment uses an analysis that estimates for every $1 billion dollars, approximately 13,000 jobs for one year are created. Put another way, each dollar creates .000013 jobs. For step 2, multiply the total project cost by .000013."*
Base Numbers & Calculation for "No Build" Estimate	
• No jobs created	
Base Numbers, Trends or Assumptions, and Calculation for "Build" Number	
• Costs tab, cell H47 Total Cost of the project: $32,603,000 • $32,603,000 * 0.000013 jobs per dollar = 423 jobs created by the project	
Change	
• **423 jobs**	

Metric Name	Air Quality
Source Data	Cal-B/C Corridor model
Base Numbers & Calculation for "No Build" Estimate	
• Emissions tab, Model Group 1: the model group removed from this benefit category estimation. • Emissions tab, Model Groups 4-7: bus emissions rates apply	
Base Numbers, Trends or Assumptions, and Calculation for "Build" Number	
• Emissions tab, Model Group 1: the model group removed from this benefit category estimation. • Emissions tab, Model Groups 4-7 (diesel buses) are replaced by Model Groups 9-13 (electric buses), assuming no emissions	
Change	
• '3) Results' tab, cells K27:S39.	