



CALIFORNIA
High-Speed Rail Authority

San Francisco to San Jose Peninsula Corridor Funding Plan

Final – January 1, 2017

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Glossary of Key Defined Terms

Agreement Regarding Commitments Toward Peninsula Corridor Electrification Project	Agreement Regarding Commitments Toward Peninsula Corridor Electrification Project approved by CHSRA Board (Resolution 16-21), signed and effective August 9, 2016, that provides further detail to the 7-party Supplement to 2012 MOU with regard to funding arrangements between the Authority and JPB.
Blended System	A blended system approach refers to the integration of high-speed trains with non-high-speed intercity and commuter/regional rail systems via coordinated infrastructure (the system) and scheduling, ticketing, and other means (operations).
California High Speed Rail Program Phase 1	The corridor of the high-speed rail system from Los Angeles and Anaheim to San Francisco including the blended system between San Francisco and San Jose.
California High Speed Rail Program Silicon Valley to Central Valley Line (“Valley to Valley Line” or “V2V”)	As defined in the 2016 Business Plan, this is the segment of the California High-Speed Rail System that runs from San Jose Diridon Station to just north of Bakersfield, which will connect with the Peninsula Corridor from San Jose to San Francisco.
Peninsula Corridor (also referred to as “San Francisco to San Jose Peninsula Corridor Segment” or “Corridor”)	Railway and facilities comprising the rail corridor between San Jose and San Francisco.
Caltrain Modernization Program (“CalMod”)	A group of rail improvement projects, (including electrifying the railroad, installing an advanced signal system, and procuring high-performance electric trains) in order to enable electrified commuter rail service from San Francisco to San Jose and to prepare the corridor for high-speed rail.
Carl Moyer Memorial Air Quality Standards Attainment Program (“Carl Moyer Program”)	A state-funded program that offers grants to reduce air pollution emissions from heavy-duty engines.
Communications Based Overlay Signal System (“CBOSS”) (also referred to as “PTC” and “Advanced	A project within the CalMod program involving the installation of a federally mandated Positive Train Control system, referred to as the CBOSS, to equip the corridor with safety technology and increase system capacity to help accommodate future increases in service and ridership demand.

Signaling”)	
Electric Multiple Units (“EMU”)	An electric multiple unit or EMU is a train where each carriage is powered separately and runs on electricity. An EMU requires no separate locomotive, as electric traction motors are incorporated within one or a number of the carriages.
High-Speed Passenger Train Finance Committee (“The Committee”)	The Committee consists of the State Treasurer, the Director of Finance, the Controller, the Secretary of Transportation, and the Chairperson of the Authority. The State Treasurer serves as Chairperson of the Committee.
Peninsula Corridor Electrification Project (“PCEP” or “Caltrain Corridor Project”)	A project within the CalMod program involving the installation of new electrical infrastructure and the purchase of electrified vehicles called Electric Multiple Units (“EMU”) for services in the Peninsula Corridor.
Peninsula Corridor Joint Powers Board (“PCJPB”, “JPB” or “Caltrain”)	The governing body for the Caltrain commuter rail transit service between San Francisco, San Jose and Gilroy.
SB 1029	Senate Bill 1029, a “trailer bill” to the State Budget Act of 2012, under which Prop 1A bond proceeds in the amount of \$600 million were appropriated by the Legislature for the PCEP.
SB 557	Senate Bill 557, enacted in 2013, adds detail to provisions governing the expenditure of the funds appropriated under SB 1029. The bill requires any track expansion for the San Francisco to San Jose segment beyond the blended system approach to be approved by all parties to the 9-Party MOU.
2013 Memorandum of Understanding	Agreement between the Authority and Caltrain to form a new partnership for the planning, environmental review, design, and construction of improvements in the Corridor using the blended system.
7-Party Supplement to the 2012 MOU (“Seven Party MOU Supplement” or “MOU Supplement”)	A 2016 supplement to the 2012 9-Party Memorandum of Understanding for Financial Commitments to address the funding gap for the Peninsula Corridor Electrification Project.
9-Party Memorandum of Understanding (“Nine Party MOU” or “2012 Nine Party MOU”)	A 2012 agreement between the Authority, Caltrain, and seven other entities to describe, identify and work to fully fund an interrelated program of projects to modernize Caltrain and enable high speed rail service in the Corridor.

Acronyms and Abbreviations

ABAG	Association of Bay Area Governments
APTA	American Public Transportation Association
Authority	California High-Speed Rail Authority
BAAQMD	Bay Area Air Quality Management District
Cap & Trade TIRCP	California State Transportation Agency's Transit & Intercity Rail Capital Program
CBOSS	Communications Based Overlay Signal System
CCSF	City and County of San Francisco
CEQA	California Environmental Quality Act
CEM	Crash energy management
CTP	San Mateo Countywide Transportation Plan
DB	Design Build
EIR	Environmental Impact Report
EMU	Electric Multiple Units
FFGA	Full Funding Grant Agreement
FOCS	Fiber Optic Communications System
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FY	Fiscal Year
GGRF	Greenhouse Gas Reduction Fund
GO	General Obligation
HMI	Human machine interface
IED	Intelligent end device
JPB/PCJPB	Peninsula Corridor Joint Powers Board
LNTP	Limited Notice to Proceed

MOU	Memorandum of Understanding
MTC	Metropolitan Transportation Commission
LCTOP	Low Carbon Transit Operations Program
PCEP	Peninsula Corridor Electrification Project
PD	Project Development
PMFA	Project Management and Funding Agreement
Prop 1A	Proposition 1A, also known as the “Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century”
Prop 1B	Proposition 1B, Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006
PTC	Positive Train Control
PTMISEA	Public Transportation Modernization, Improvement, and Service Enhancement Account Program
RIMP	Risk Identification and Management Plan
ROCS	Rail Operations Control System
RTU	Remote Terminal Unit
SB	Senate Bill
SCO	State Controller’s Office
SFCTA	San Francisco County Transportation Authority
S&H Code	Streets and Highways Code
SMCTA	San Mateo County Transportation Authority
TASI	Transit America Services Inc.
TJPA	Transbay Joint Powers Authority
VTA	Santa Clara Valley Transportation Authority
YOE	Year of Expenditure

Introduction

Proposition 1A, the “Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century” (the Bond Act) was approved by voters in November 2008. The Bond Act authorizes \$9.95 billion in general obligation (GO) bonds to pay for the capital costs of the high-speed rail system and improvements to regional services which will connect to the system. The Bond Act is codified in Streets and Highways Code Section (S&H) section 2704 et seq. S&H section 2704.08, subdivision (d) requires that, prior to committing any proceeds of bonds described in paragraph (1) of subdivision (b) of Section 2704.04 for expenditure for construction and real property and equipment acquisition on each corridor, or usable segment thereof, other than for costs described in subdivision (g), the authority shall have approved and concurrently submitted to the Director of Finance and the Chairperson of the Joint Legislative Budget Committee the following: (1) a detailed funding plan for that corridor or usable segment thereof...(as further described herein); and (2) a report or reports prepared by one or more financial services firms, financial consulting firms, or other consultants, independent of any parties, other than the authority, involved in funding or constructing the high-speed train system, making certain indications.

Purpose of the Funding Plan

The California High-Speed Rail Authority (Authority) is submitting this Funding Plan in satisfaction of Streets and Highways Code section 2704.08, subdivision (d) for the commitment of \$600 million of Proposition 1A (Prop 1A) bond proceeds for expenditure on improvements to the San Francisco to San Jose Peninsula Corridor Segment (“Peninsula Corridor” or “Corridor”) between San Francisco 4th and King and San Jose Tamien Stations. These improvements will both electrify and modernize the Caltrain system and at the same time provide the necessary foundational improvements for the Authority to run high-speed rail service to San Francisco.

As the Legislature directed in making the appropriation of the funds in Senate Bill (SB) 1029 and reaffirmed in SB 557, the Authority plans to use these Prop 1A bond proceeds to electrify the Corridor. Caltrain has embarked on the Caltrain Modernization (CalMod) program, which includes the following components:

1. Installation of a federally-mandated Positive Train Control (PTC) system, otherwise known as the Communications Based Overlay Signal System (CBOSS). CBOSS construction is almost complete and will be finished before the electrification project that is the subject of this Funding Plan.

2. The Peninsula Corridor Electrification Project (PCEP) that includes electrification of the corridor as well as the purchase of Electric Multiple Units (EMUs) that will upgrade the fleet from diesel to electric.¹

Together, the CalMod projects are essential for creating the necessary capacity for high-speed trains to run on the corridor. All of the CalMod components (CBOSS, electrification, and EMUs) are necessary to create the capacity and slots to allow for high-speed rail services in the corridor.

PCEP is the subject of this Funding Plan and is estimated to cost **\$1.980 billion** (in Year of Expenditure (YOE) dollars).

The project follows the “Blended System” approach outlined in the Authority’s 2012 Business Plan (approved by the California High-Speed Rail Board (Board) on April 12, 2012, Resolution HSR#12-13) and established in SB 1029. The blended system approach refers to the integration of high-speed trains with non-high-speed intercity and commuter/regional rail systems via coordinated infrastructure (the system) and scheduling, ticketing, and other means (operations). Upon completion of the projects described in this Funding Plan, full connectivity will be provided between the Caltrain system and the Silicon Valley to Central Valley Line (Valley to Valley Line), a segment on which the Authority has begun construction and plans to run service. After completion of the PCEP, both electrified Caltrain trains and high-speed trains would (extending from the Valley to Valley Line) be able to start using the corridor. However, the Authority plans to make further improvements to speed up service and meet other goals in the corridor and is working to environmentally clear those improvements right now.

Although this Funding Plan describes Caltrain’s plans and estimates for how they will implement the PCEP, the Authority’s key interests in the corridor are governed by the 2016 Business Plan and the agreements that the Authority either has or will execute with Caltrain. The Business Plan lays out the Authority’s plans to begin Valley to Valley service in 2025, by which point if PCEP is complete, the Authority could begin to run trains in the corridor. Additionally, the Authority’s agreements with Caltrain spell out the Authority’s responsibility to contribute a specified and maximum amount of funding (including the \$600 million that is the subject of this Funding Plan) to the project in return for Caltrain delivering the PCEP, granting the Authority the rights that are available to them to operate in the corridor, and collaborating with the Authority on future improvements that will be made to enhance the blended service. Thus the Authority’s plans in the corridor only require Caltrain to fulfill their commitments from the Authority’s agreements with them and complete PCEP by 2025, several years after its currently planned completion.

Background

In January 2004, the Authority and the Peninsula Corridor Joint Powers Board (PCJPB or JPB) entered into a memorandum of understanding (MOU) to establish a framework for future cooperation between

¹ Prop 1A funds will only be used for the electrification piece of PCEP and not the purchase of EMUs.

the two agencies for the development of a high-speed train system for California that would share the rail corridor between the City of San Jose and the City and County of San Francisco (CCSF).

The Authority's 2012 Business Plan established a policy to develop the high-speed rail system utilizing a blended approach consisting of primarily a two-track blended system that would accommodate future high-speed rail trains, existing freight, and modernized PCJPB commuter rail service in the Corridor.

The Authority and the PCJPB, together with the Metropolitan Transportation Commission (MTC), the San Francisco County Transportation Authority (SFCTA), the Santa Clara Valley Transportation Authority (VTA), the City of San Jose, the CCSF, the San Mateo County Transportation Authority (SMCTA) and the Transbay Joint Powers Authority (TJPA) entered into an MOU that adopted an early investment strategy for the Blended System in the San Francisco to San Jose Peninsula Corridor ('2012 Nine Party MOU'). The 2012 Nine Party MOU includes the Authority's commitment to secure approval and release of \$600 million of Proposition 1A funds and \$106 million of Proposition 1A "connectivity" funds to complete, at the earliest possible date, the CalMod program. In July 2012, the Legislature passed and the Governor signed SB 1029 that appropriated the \$600 million of Proposition 1A funds for PCEP and \$106 million of connectivity funds for CBOSS, as contemplated in the 2012 Nine Party MOU. The Authority's funding for the project is being matched by a variety of federal, state, and local sources.

Since 2012, PCJPB has certified a California Environmental Quality Act (CEQA) Environmental Impact Report (EIR) for the PCEP and has engaged in a competitive procurement process for the PCEP which has led to separate design build (DB) contracts for the Corridor electrification and the purchase of EMUs. Both of these contracts have been executed. After receiving bids on the contracts, PCEP is now projected to cost \$1.980 billion (this does not include the cost of CBOSS), which is higher than the original cost estimate in the 2012 Nine Party MOU.

To fill the funding gap, PCJPB has applied for, and significantly advanced in the process of receiving, a \$647 million grant from the Federal Transit Administration's (FTA) Core Capacity Program, which did not exist at the time of the 2012 MOU. Execution of the Full Funding Grant Agreement (FFGA) that would finalize the grant is expected in early 2017. Additionally, seven of the original nine parties to the 2012 Nine Party MOU have approved additional funds to pay for the increase in project cost. Those parties and corresponding commitments are:

1. California High-Speed Rail Authority: \$113 million
2. PCJPB: \$9 million
3. The MTC: \$28.4 million
4. The SFCTA: \$20 million total with CCSF
5. The VTA: \$20 million
6. The CCSF (see SFCTA)
7. The SMCTA: \$20 million.

On August 9, 2016 the Authority Board approved a funding agreement and the 7-party Supplement to the 2012 MOU that further reiterates the Authority’s commitment to provide to \$600 million in Prop 1A funds (as directed by the Legislature in 2012), and an additional \$113 million from Cap-and-Trade or other sources, approved by the Authority Board to support the PCEP. An electrified corridor is foundational to the Authority running its electrified trains, in a blended system with Caltrain. Along with approving the agreement, the Board (as a CEQA responsible agency) adopted CEQA findings regarding PCEP.

Finally, PCJPB was awarded \$20 million of California State Transportation Agency’s Transit & Intercity Rail Capital Program (Cap & Trade TIRCP) funds. With the combination of these additional funds, the PCEP is now fully funded.

Exhibit I-1: Sources of Funds Summary

Source	\$ Amount	%
Federal	977.7	49.4%
State	741	37.4%
Local	261.6	13.2%
Total Project Funding	1980.3	100%

Source: PCEP Funding Plan

Current Status

Throughout 2016 the PCEP team continued to advance the project. As planned in the procurement process for the electrification contract, an apparent best value proposer was selected and negotiations were initiated in April. The project team worked extensively to negotiate technical and commercial sections with the apparent best value proposer. The negotiations were successfully completed at the end of June. The JPB awarded the electrification contract to Balfour Beatty Infrastructure, Inc. at its meeting on July 7, 2016. It was fully executed on August 15, 2016.

The PCJPB procurement process also continued for the EMU manufacturer. PCJPB staff began negotiations in late April with Stadler US, Inc. Negotiation discussions focused on technical exceptions and contractual / legal exceptions. The project team issued a letter to Stadler on May 20, 2016 to request a proposal in response to negotiations. Stadler submitted a revised proposal on June 17, 2016 after which negotiations were successfully completed. The JPB awarded the EMU Vehicle contract to Stadler US, Inc. at its meeting on July 7, 2016. The contract was fully executed on August 15, 2016.

Organization of the Funding Plan

This Funding Plan is organized consistent with the requirements of S&H Code section 2704.08, subdivision (d).

Section A of this Funding Plan describes the San Francisco to San Jose Peninsula Corridor Segment as the Usable Segment for this Funding Plan.

Section B of this Funding Plan describes the sources of funds to be used for the improvements to the Corridor.

Section C of this Funding Plan provides the projected ridership and operating revenue for the Caltrain service in the Corridor.

Section D of this Funding Plan describes the construction cost estimates, including cost escalation and reserves for contingencies, for the PCEP.

Section E Since the Legislature made the appropriation for the PCEP without a separate subdivision (c) Funding Plan, there are no material changes to report.

Section F of this Funding Plan describes the terms and conditions of agreements that the Authority has executed or intends to enter into with Caltrain for the construction and operation of the Corridor. It also describes certain other existing agreements between Caltrain and/or the Authority and other parties.

A. The Usable Segment

Streets and Highways Code section 2704.08, subdivision (d)(1)(A) requires identification of the corridor, or usable segment thereof, and the estimated full cost of constructing the corridor or usable segment thereof. A usable segment is defined as a portion of corridor that includes at least two stations.

The Usable Segment – Requirements

This subsection outlines the requirements for a Corridor or Usable Segment and illustrates how the Peninsula Corridor, with the improvements included in the CalMod program and PCEP, meets these requirements. The Board has identified and selected the Corridor as a Usable Segment by its adoption of this Funding Plan. As part of the selection process, the Board considered the criteria for prioritization set forth in Section 2704.08, Subdivision (f).

The Peninsula Corridor meets the requirements of a Usable Segment, which is defined in Section 2704.01 as “a portion of a corridor that includes at least two stations.” The Corridor runs from the current line’s northern terminus at the 4th and King Street Station in the City of San Francisco to Tamien Station in San Jose, a total distance of approximately 51 miles. The usable segment includes high-speed rail stations at 4th and King Street in San Francisco and at Diridon Station in San Jose. Eventually, through additional investments, the service will be expanded to a permanent terminal at the San Francisco Transbay Transit Center and will serve a station at Millbrae. That extension is not part of this Funding Plan.

The scope of the PCEP is summarized in **Exhibit A-1**. Additional details also may be found in Section D, Projected Construction Cost, in this Funding Plan. **Exhibit A-2** provides a map of the CalMod program construction boundaries.

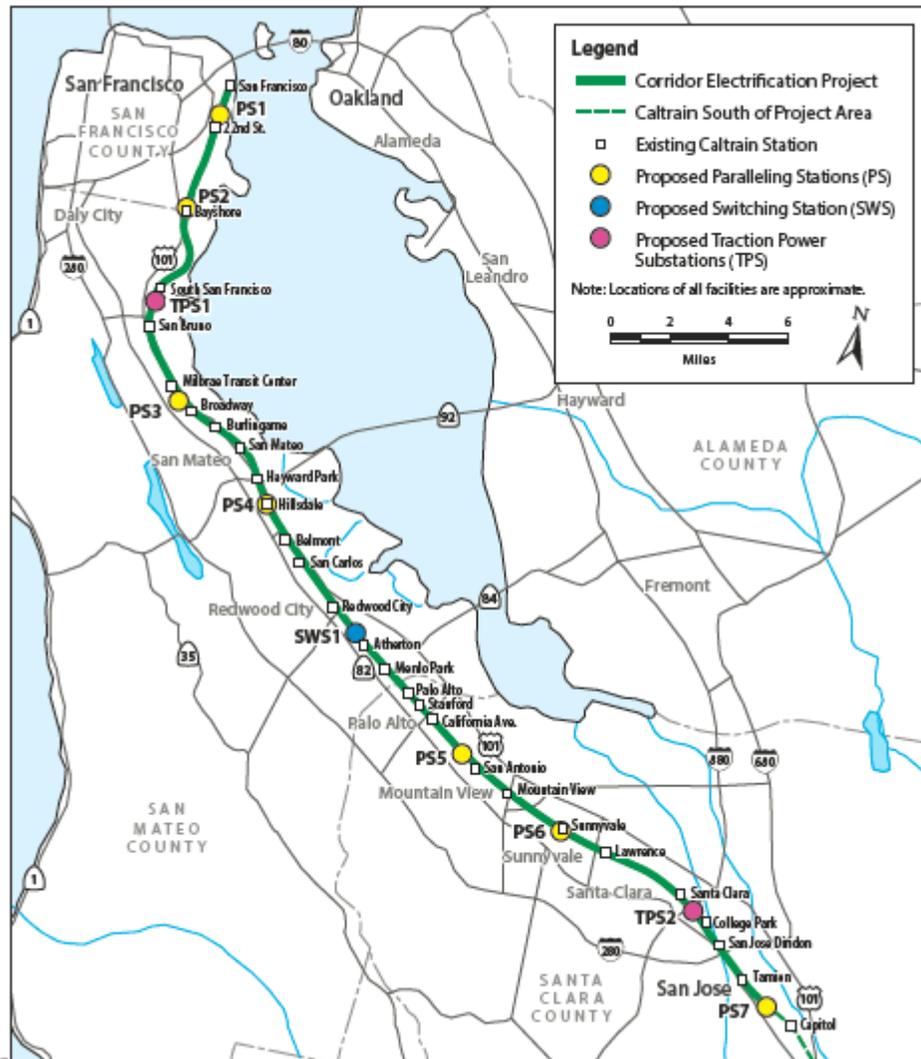
Exhibit A-1. Peninsula Corridor Electrification Project – Major Elements

Section / Scope	Description	Estimated Cost (YOE \$)	Delivery Method & Current Status
Electrification Infrastructure	Design and construction of the electrified infrastructure including the Overhead Catenary System, substations, switching stations, paralleling stations and management reserve	\$1,316 million	DB contract executed and Limited Notice to Proceed (LNTP) for design and some advanced material purchases approved
Purchase of EMUs	Purchase of up to 96 EMU’s	\$664 million	Contract for bi-level EMUs has

Section / Scope	Description	Estimated Cost (YOE \$)	Delivery Method & Current Status
	to replace Caltrain's fleet of diesel rolling stock		been executed and LNTP has been approved.
Total PCEP Cost		\$1,980 million	

Source: Caltrain (includes capital costs, retained costs and contingencies)

Exhibit A-2. Peninsula Corridor Modernization Project Construction Boundaries



Source: Caltrain EIR Executive Summary

Caltrain Modernization Program

Caltrain is completing the CalMod Program to electrify and modernize the railroad and allow for high-speed rail blended service in the corridor. CalMod encompasses the delivery of CBOSS to be completed

in 2017 and PCEP to be completed by December 2021. Additionally, planning efforts will prepare for the shared use of the Peninsula Corridor by both Caltrain and high-speed rail service in a blended system.

The electrification system envisioned for the corridor will be configured in such a way that it would enable the future operation of high-speed rail service. The power supply system of choice for a steel wheel-on-steel-rail high-speed train operation is 25-kV, 60-Hz, single-phase AC electrification, which is also what the JPB needs for its EMUs and which is what PCEP will install. The Corridor is currently rated for a maximum of 79 mph and high-speed trains would be able to run at that speed after the PCEP improvements are made. However, to make the service faster and safe at higher speeds, track and other system upgrades will be needed in the future in order to support higher speeds. High-speed rail service in the corridor has never been envisioned at 220mph so the upgrades that will be needed in the future will achieve more modest speed increases. Those upgrades and higher speed operations are the subject of a separate environmental analysis being conducted by the Authority and Federal Railroad Administration (FRA).

Exhibit A-3 describes the major milestones achieved or to be reached toward completion of the PCEP improvements on the Corridor.

Exhibit A-3. Major Milestones Achieved in Advancing the Usable Segment

Milestone	Description	Date
1	Federal Environmental Review / 35% Design	Complete-2009
2	2012 Nine Party MOU	Complete-2012
3	Board Action for Selection of Contracting Method (DB for electrification, Best Value for Vehicles)	Complete-2013
4	Procurement of Owner’s Team	Complete-2014
5	Request for Qualifications for Electrification and Request for Information for Vehicles	Complete-2014
6	State Environmental Review	Complete-Jan. 2015
7	Approval of Entry into Core Capacity Program/Project Development (Federal Funding)	Complete-Apr. 2015
8	Inclusion of \$125 million Core Capacity Funding in FY17 President’s Budget.	Feb. 2016
9	Caltrain Board Approves Electrification and EMU Contracts	Complete – Jul. 2016
10	Design / Manufacture / Build / Test	2016-2020-21
11	Open for Revenue Service	2020-21

B. Sources of Funds and Anticipated Time of Receipt

Streets and Highways Code section 2704.08, subdivision (d)(1)(B) requires identification of the sources of all funds to be used and anticipated time of receipt thereof based on offered commitments by private parties, and authorizations, allocations, or other assurances received from governmental agencies.

This section describes the sources of funds for the PCEP, summarizes key conditions to receipt of funds, including timing constraints and matching funds requirements, and presents the anticipated time of receipt of such funds. A more detailed breakdown of the anticipated timing of each funding source is provided in the PCEP Funding Plan included in **Appendix I**.

Overview of Sources of Funds

SB 1029 appropriated \$600 million from Prop 1A for the PCEP. Additional funds for the project were approved by the Authority Board of Directors in the 7-Party Supplement to the 2012 MOU. **Exhibit B-1** summarizes the sources of all funds contributing to PCEP from all sources.

Exhibit B-1. Sources of Funds for PCEP (\$ millions)

Type	Source of funds	Funding Level (\$millions)	% of Total	Evidence of Commitment
Federal	FTA Formula Program Funds	330.7	16.7%	CA-03-0598: \$960K CA-03-0542: \$2.7M CA-03-0565: \$16.8K CA-90-Y246: \$12M CA-54-0034: \$5.23M (part of \$315M) CA-95-X074: \$4M (SF Transfer to JPB-part of SF local commitment) Funds to be provided by MTC as part of 9-Party MOU
Federal	Section 5309 Core Capacity	72.9	3.7%	FY16 Apportionment: \$14.3M FY14 and FY15 Apportionments: \$58.6M
Federal	Section 5309 Core Capacity	574.1	29.0%	FY17 President's Budget: \$125M FFGA anticipated in early 2017
State	Prop 1B Public Transportation Modernization,	8.0	0.4%	California Department of Transportation Allocation Letter

	Improvement, and Service Enhancement Account Program			
State	Prop 1A	600.0	30.3%	SB 1029 and SB 557
State	Cap-and-Trade or other Authority/State Sources	113.0	5.7%	August 9 2016 Authority Board Action Agenda Item 2
State	Transit and Intercity Rail Capital Program	20.0	1.0%	Grant award announced 8/16/16
Local	Carl Moyer Program	20.0	1.0%	Signed Funding Agreement with BAAQMD
Local	JPB Members	193.2	9.8%	9-Party Funding MOU + 7 Party Supplement
Local	MTC Bridge Tolls	39.4	2.0%	MTC Resolutions 3195 and 4243
Local	Caltrain (LCTOP)	9.0	0.5%	7 Party Supplement
Total Project Funding		1,980.3	100.0%	

Source: PCEP Funding Plan

Federal Funds

FTA Section 5309 Core Capacity Funds

As part of the FTA Section 5309 Core Capacity Program, the JPB submitted a request for \$647 million (YOES) in capital funding from for the PCEP, equal to 33 percent of the project's total cost of \$1,980.25 million for electrification and EMUs (YOES). The JPB expects to negotiate a FFGA with the FTA for the Core Capacity grant funds in early 2017. The funds would be subject to annual appropriation by Congress with the funding currently programmed through Federal Fiscal Year 2020 through the Fixing America's Surface Transportation Act. The Core Capacity program's process includes three steps: Project Development (PD), Engineering, and FFGA. Once an FFGA is approved, funds are requested each year in the President's budget and are approved through appropriation by Congress.

On April 16, 2015, the JPB received notification from the FTA that the project had been accepted into the PD phase of the Core Capacity program. With this approval, JPB has pre-award authority to incur costs for PD activities prior to the receipt of an FFGA from FTA. PD activities include all work necessary to complete the environmental review process and as much engineering and design activities as JPB believes is necessary to support the environmental review process. Upon completion of the environmental review process FTA extends pre-award authority to project sponsors in PD to incur costs for as much engineering and design as necessary to develop a reasonable cost estimate and financial plan for the project utility relocation, real property acquisition and associated relocations. This pre-award authority does not constitute a commitment that future federal funds will be approved for PD or any other project cost. As with all pre-award authority, relevant federal requirements must be met prior to incurring costs in order to preserve eligibility of the cost for future FTA grant assistance.

On February 9, 2016, President Obama released his FY 2017 federal budget which included \$125 million for PCEP through the FTA Core Capacity Program. In addition, the FTA announced that the project will receive more than \$72 million in prior year Core Capacity funding apportionments. The funding announcement signaled progress toward an FFGA between Caltrain and FTA. Based on Caltrain's application process with FTA, the FFGA is expected to be approved in early 2017 with funds available over the course of the construction period based on the grant agreement.

On August 12, 2016, the FTA approved the PCEP's entry into Engineering with an overall rating of "medium-high". This approval provides additional pre-award authority for non-construction activities including completing engineering work, procuring long-lead time items and any specialized equipment required for the project. Entry into Engineering has locked the share of federal funds that Caltrain can apply for at \$647 million. Both PD and Engineering are important steps in the process of getting an FFGA. Caltrain's significant efforts in moving the program forward and the quick advancement through the Core Capacity application process shows the likelihood that the grant will be approved.

FTA Formula Program Funds

FTA Formula Program funds include prior/current year grants of \$24.91 million and future year commitments of \$309.77 million. These Federal funds are committed by the MTC through the 2012 MOU.

State and Local Funds

Over \$700 million in State and local funding for PCEP is committed through a regional agreement (the 2012 Nine Party MOU) between the following Funding Partners:

1. The Authority
2. MTC
3. PCJPB
4. SFCTA
5. SMCTA
6. VTA
7. City of San Jose
8. CCSF
9. TJPA

The 2012 MOU is the result of a collaborative effort between the JPB, the Authority, the MTC and San Francisco Bay Area local agencies to identify early investments projects along Caltrain's existing rail corridor that improve service, safety and efficiency, and create linkages between the planned state high-speed rail system and local passenger rail service.

In addition to the funds identified in the 2012 MOU, additional funding sources have been committed by the Authority and the other funding partners through a supplemental agreement. This MOU Supplement provides an additional \$210 million in funding and involves seven funding partners, including the

Authority, JPB, MTC, SFCTA, CCSF, VTA, and SMCTA. The MOU Supplement was approved by the JPB in May 2016 and was approved by the Boards of the other signatories between June and August 2016.

State General Obligation Bonds -- Proposition 1A

The Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century approved by the voters as Proposition 1A on November 4, 2008, provides over \$9 billion in bond funding for construction of a high-speed rail system in California. In 2012, SB 1029 appropriated \$600 million in Proposition 1A funds to the construction of the PCEP. These funds require, at project completion, a dollar-for-dollar match of other Federal, State, or local funding.

Pursuant to S&H Code section 2704.08, in order for the Authority/Caltrain to use the bond funds, the Director of Finance must review this Funding Plan and find that the plan is likely to be successfully implemented as proposed. Additionally, under S&H Code section 2704.12 and subsequent sections, the High-Speed Passenger Train Finance Committee² (Committee) must first authorize the issuance of the bond funds. In 2013, the Committee authorized Prop 1A Bond funds in the amount of \$8.6 billion. In 2015, the Sacramento Superior Court entered judgment validating that authorization.

State Non-Prop 1A Funding

The Authority has also committed up to \$113 million in additional funds, which will come from Cap-and-Trade or other sources available to the Authority and the State, to the PCEP, above and beyond the original \$600 million commitment of Proposition 1A funding. The Authority Board approved the commitment of these funds at their August 9, 2016 meeting. On November 18, 2016 the Authority and PCJPB executed an agreement to make these funds available.

On June 20, 2014, the Governor signed the Budget Act of 2014 (SB 852 and SB 862), which included an appropriation of proceeds from the State's Cap-and-Trade Program to various programs and projects that will reduce greenhouse gas emissions in furtherance and accordance with Assembly Bill 32 (Global Warming Solutions Act of 2006). Specifically, SB 852 appropriated \$872 million in Cap-and-Trade auction proceeds from the Greenhouse Gas Reduction Fund (GGRF) in Fiscal Year (FY) 2014-15, with \$250 million going to the high-speed rail project. SB 862 also appropriated \$400 million to the Authority to be made available starting in FY 2015-16, and continuously appropriated until expended. These one-time appropriations are further augmented by SB 862, known as the Cap-and-Trade Expenditure Plan, which established a programmatic structure for the continuous appropriation of annual Cap-and-Trade proceeds from the GGRF including 25% of all proceeds for the high-speed rail program.

In making the continuous appropriation, the Legislature determined that these funds could be used to pay for planning and construction costs for the Phase 1 Blended System and/or to repay loans made to

² The Committee consists of the State Treasurer, the Director of Finance, the Controller, the Secretary of Transportation, and the Chairperson of the Authority. The State Treasurer serves as Chairperson of the Committee.

the Authority. The Authority has already received the Cap-and-Trade proceeds necessary to meet its obligations for the additional funding.

Proposition 1B/Public Transportation Modernization and Improvement Account

The Public Transportation Modernization, Improvement, and Service Enhancement Account Program (PTMISEA) was created by Proposition 1B, the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act, approved by California voters in 2006. PTMISEA funds may be used for transit rehabilitation, safety or modernization improvements, capital service enhancements or expansions, new capital projects, bus rapid transit improvements, or rolling stock (buses and rail cars) procurement, rehabilitation or replacement. Funds in this account are appropriated annually by the Legislature to the State Controller's Office (SCO) for allocation through the State Transit Assistance formula (contained in Public Utilities Code Article 6.5) distributions: 50% allocated to Local Operators based on fare-box revenue and 50% to Regional Entities based on population. In November 2014, the JPB committed \$8 million in formula funds from the PTMISEA to the PCEP.

On November 7, 2014, the JPB received a letter from the Department of Transportation confirming that the award had been made in full and that funds would be allocated directly.

Carl Moyer Program

The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) is a state-funded program that offers grants to reduce air pollution emissions from heavy-duty engines. The program is administered by the Bay Area Air Quality Management District (BAAQMD), which approved and allocated \$20 million in Carl Moyer Program funds for the PCEP in July 2015. The JPB anticipates receiving \$4M per year for five years.

JPB Member Contributions

The JPB member agencies provide equal shares of local capital funds for system-wide improvement projects. Funding from the respective partners comes from their local sources. JPB members contributed a total of \$133 million in the Nine Party MOU from the following sources:

- San Mateo County ½ cent sales tax
- VTA Measure A sales tax
- San Francisco County Proposition K sales tax, Regional Transportation Improvement Program, and San Francisco County GO Bond proceeds.
 - SFMTA - will disburse up to \$39 million of GO Bond proceeds, inclusive of the initial \$7.76 million disbursement, to the JPB's account as eligible capital costs are incurred.

It should be noted that \$4 million of San Francisco's commitment to the project is included in FTA grant CA-90-X074. These funds were transferred to the JPB in lieu of an equivalent amount of local funds from the City and County of San Francisco.

JPB Member Contributions—7-Party Supplement

VTA, SMCTA, SFCTA and CCSF are providing an additional \$20 million each (a total of \$60 million) for the project. These funds have been committed through the 7-Party Supplement that was approved by the JPB in May 2016 and was approved by the Boards of the other signatories between June and August 2016.

MTC Bridge Tolls

Bridge toll revenues provide funding for transit projects on or near bridge corridors that help to relieve bridge traffic and/or provide alternative public transit services. These funds are administered by the MTC, which has committed \$39.4 million to the project through Resolutions 3195 and 4243, passed by the MTC Board in June 2016.

The JPB approved the allocation of these funds at their July 2016 meeting. Funds are currently available for both the electrification and EMU components of the project and are available in their entirety on a reimbursement basis.

Caltrain LCTOP

The LCTOP program provides state Cap-and-Trade proceeds on a formula basis to transit agencies to help fund transit projects and transit operations that reduce greenhouse gas emissions. The JPB will allocate \$9 million of its formula share of LCTOP funds to the Project as indicated in the 7-Party Supplement. These funds are received on an annual basis and so far \$1.9 million in Fiscal Years 2015 and 2016 funds has been committed. All of JPB's annual LCTOP formula funding will be directed to costs associated with the procurement of EMU's until the \$9 million commitment has been reached.

Additional Funding for Cost Overruns or Funding Shortfalls

As part of its review of Caltrain's Core Capacity Grant evaluation, FTA recommended that Caltrain have a plan in place to address either a 10% cost overrun or a 10% funding reduction, which equates to about \$198 million. In a November 22, 2016 letter to FTA, Caltrain confirmed that the PCEP local and regional funding partners including MTC, SMCTA, VTA, and CCSF and SFCTA have agreed to provide a commitment of up to an additional \$50 million each to fund any potential cost overruns up to \$200 million. These commitments, if necessary, would provide funding over and above the \$1.98 billion budget, which already includes \$316 million in overall project contingency.

C. Projected Ridership and Operating Revenue

Streets and Highways Code section 2704.08, subdivision (d)(1)(C) specifies inclusion of a projected ridership and operating revenue report. There are several provisions of the Bond Act that contemplate use of newly constructed high-speed rail line segments for non-high-speed passenger train service, as distinguished from high-speed train service. (see § 2704.08, subd. (f)(3) [referring to "the utility of those corridors or usable segments thereof for passenger train services other than the high-speed train service"]; see § 2704.08, subd. (c)(2)(I) [referring to "one or more passenger service providers ... using the tracks or stations for passenger train service"]; see Sec. 2704.08, subdivision (d)(2)(C) [referring to "one or more passenger train providers ... using the tracks or stations for passenger train service"]]).

Caltrain has developed tools to forecast the projected ridership and revenue for its system. Caltrain will operate its service between San Francisco, San Jose, and Gilroy.³ The Authority will run its high-speed rail service on the San Francisco to San Jose Corridor using a blended system approach once it is connected with the Valley to Valley Line, as described in the 2016 Business Plan. The Authority is not planning to run stand-alone service in the San Francisco to San Jose Peninsula Corridor Segment.⁴

Peninsula Corridor Projections

Caltrain has projected ridership and revenue for its own rail operations in the Corridor. Implementation of the Caltrain Modernization project is anticipated to result in increased ridership. Caltrain expects its improved electrified service on the Corridor to increase daily weekday ridership from 47,000 per year in 2013 to 69,000 per year in 2020 and 111,000 in 2040 (Source: Final EIR, Vol. 1, PG. 2-14, Table 2-3).

³ PCEP only electrifies the Corridor between San Jose and San Francisco so service to Gilroy will be operated using diesel trains. The Authority is developing its own plans to connect San Jose and Gilroy that will be separate from Caltrain's diesel service.

⁴ The Authority has conducted extensive analysis of ridership for the Valley to Valley Line and those forecasts are included in the 2016 Business Plan. The ridership forecasts for the Authority's service that will use the Corridor are provided in the Business Plan as well as associated technical documents available on the Authority's website at http://hsr.ca.gov/About/Business_Plans/2016_Business_Plan.html.

Additionally, further technical information on the Authority's ridership and revenue forecasts is available on the Authority website here:

http://hsr.ca.gov/About/ridership_and_revenue.html

Table C-1. Caltrain Estimated Daily Weekday Ridership with the Project

Daily Weekday Ridership	2013	2020	2040
Existing/No Project	47,000	57,000	84,000
With Project	n/a	69,000	111,000

Source: Caltrain FEIR, Appendix I, Ridership Technical Memorandum.

Note that the following assumptions have been made in relation to the production of the above data⁵:

- Ridership above is based on boardings, not boardings *and* alightings.
- 2020 was used for ridership analysis to ensure full operation of the new electrified service.
- Existing / “No Project” analysis assumes the same schedule as at present (5 trains per peak hour; 1 train per off-peak hour per direction; total of 92 trains per day) for both 2020 and 2040
- For 2020, analysis assumed 75% electrified and 25% diesel service from San Jose to San Francisco.
- For 2040, analysis assumes fully electrified service between San Jose and San Francisco. PCEP only has sufficient funding at present to provide 75% electrified service between San Jose and San Francisco. Caltrain anticipates that it will obtain additional funding to allow full electrified service between San Jose and San Francisco to occur by 2040

The Caltrain ridership projections are based on a travel demand model. The travel demand model used to prepare the systemwide ridership forecasts to support PCEP is a version of the VTA Model developed for the San Mateo City/County Association of Governments in 2011. This version of the VTA Model was originally developed in 2009 by the VTA to support the Grand Boulevard Initiative Corridor Project and the San Mateo Countywide Transportation Plan (CTP) update. The VTA Model used in the CTP update was validated to year 2005 conditions and made use of the Association of Bay Area Governments (ABAG) Committed Regional Plans socioeconomic data forecasts (informally known as ABAG projections 2011) to develop forecast year 2035 projections (Source: Caltrain Ridership Technical Memorandum).

The model incorporates enhancements and considerations including:

- Updated to reflect 2013 base year conditions
- Adjusted and validated to year 2013 Caltrain system ridership
- Updated from the original base year 2005 for both transit and highway network changes, including a comprehensive update of both public and private shuttles serving the Corridor.

⁵ At the time when forecasts were provide Caltrain assumed an opening date of 2020

- Used to prepare forecast year ridership and output for the project horizon years of 2020 and 2040, using updated socioeconomic data forecasts prepared by ABAG and updated background transportation improvements as defined in the recently adopted Bay Area Regional Transportation Plan.

The inputs to the model included:

- ABAG Socioeconomic Data Projections
- Roadway and Transit Networks
- Pricing
- Caltrain Schedules and Service Levels for Base Year 2013 and 2020 Project and 2040 Project + Transbay Transit Center Conditions.

(Source: Final EIR Appendix I, Ridership Technical Memorandum, pp. 1-10)

The EIR Appendix I, Ridership Technical Memorandum, contains more complete information that is the basis for the modeling and the results. **Exhibit C-2** below describes the forecast revenue and ridership for the Corridor (Caltrain services only) from 2015 through 2024. Revenue forecasts are based on annualized ridership estimates and an assumed schedule of fare increases. Annualized ridership estimates are interpolated from 2013 project-level ridership forecasts and have been adjusted based on updated project schedule and actual ridership trends.

Exhibit C-2 – Caltrain Annual Ridership and Operating Revenue

Year by Year Caltrain Revenues & Ridership										
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Farebox Revenue (\$ millions)	\$80.0	\$83.7	\$91.1	\$92.5	\$100.9	\$102.8	\$121.4	\$128.9	\$142.3	\$146.7
Non-Farebox Revenue (\$ millions)	\$9.3	\$9.2	\$9.5	\$9.6	\$9.9	\$10.0	\$10.9	\$11.2	\$11.5	\$11.7
Ridership (millions)	19.2	20.5	20.8	21.1	21.5	21.9	24.5	26.1	26.1	27.7

Source: Caltrain SRTP Tables 4.1 and 4.3

D. Projected Construction Cost

Streets and Highways Code section 2704.08, subdivision (d)(1)(D) requires inclusion of a construction cost projection including estimates of cost escalation during construction and appropriate reserves for contingencies.

This section provides the cost estimate for construction activities for the PCEP.

Construction Cost Projections

The cost for the PCEP is estimated at **\$1.980 billion YOES** (\$1.855 billion in \$2015). A breakdown is provided in **Exhibits D-1 and D-2** below. At this point, contracts have been awarded for both the electrification design-build contract and the EMU purchase. The estimated construction costs include an escalation component of **\$125 million**. Allocated and unallocated contingencies in the estimate add up to **\$316 million**.

Exhibit D-1 below sets out the cost of construction for the PCEP in both Base Year 2015 and YOE dollars. The data is presented in the FTA's Standard Cost Categories.

Exhibit D-1 – PCEP Capital Costs

STANDARD COST CATEGORIES (COSTS IN X\$000)	Base Year (2015) Dollars	YOE Dollars
10 GUIDEWAY & TRACK ELEMENTS	13,373	14,257
20 STATIONS, STOPS, TERMINALS, INTERMODAL	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	2,124	2,265
40 SITEWORK & SPECIAL CONDITIONS	240,001	255,253
50 SYSTEMS	476,697	504,812
60 ROW, LAND, EXISTING IMPROVEMENTS	36,615	37,316
70 VEHICLES	577,400	630,535
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	353,409	368,084
90 UNALLOCATED CONTINGENCY	150,353	162,620
100 FINANCE CHARGES	4,822	5,110
Total Project Cost (10 - 100)	1,854,794	1,980,253

Cost Estimating Methodology

The PCEP capital cost estimate was updated in 2014 based on the 2008 35% design documents, as well as taking into account infrastructure upgrades, CBOSS, and new understanding of the project. The capital cost estimate was primarily a bottoms-up estimate, using detailed labor, material, equipment and productivity inputs. As new information has become available, the estimate has been updated. The capital cost estimate for the PCEP is \$1.98B comprised of electrification and vehicles.

Exhibit D-2 – Total PCEP Budget

Description of Work	Budget (in YOE USD thousands)
Electrification Work	1,316,125
Vehicles Total	664,127
PCEP Total	1,980,253

Both electrification and vehicles include the design-build contracts, agency costs, required projects, contingency, and other costs.

The costs associated with the electrification design-build (including overhead catenary, traction power, signals, grade crossings, communications, design, environmental mitigation and Transit America Services Inc. (TASI) force account) is taken directly from the final negotiated design-build contract, and shown in the table below. The balance of the electrification portion of the project includes agency costs (including environmental mitigations, real estate, utilities, management oversight, Railroad Protective Liability Insurance, required projects, and TASI Support), as well as contingency and finance charges. **Exhibit D-3** provides a high level summary of the electrification costs.

Exhibit D-3 – Electrification Infrastructure Budget

Description of Work	Budget (in YOE USD thousands)
10 GUIDEWAY & TRACK ELEMENTS	14,257
20 STATIONS, STOPS, TERMINALS, INTERMODAL	-
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	18
40 SITEWORK & SPECIAL CONDITIONS	255,253

50 SYSTEMS	504,812
60 ROW, LAND, EXISTING IMPROVEMENTS	37,316
70 VEHICLES	4,541
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	362,827
90 UNALLOCATED CONTINGENCY	133,933
100 FINANCE CHARGES	3,168
Total Project Cost (10 - 100)	1,316,125

The management oversight and TASI support costs are based on staffing plans and actual direct and indirect employee costs. Environmental mitigation costs are based on the tasks identified in the EIR, with a combination of conceptual and bottoms-up costs. The costs associated with utility relocations have recently been updated based on discussions with local utilities. Real estate costs are based on 2014 plans depicting specific locations required for foundations, as well as easements required to maintain proper electrical clearances.

The vehicle (EMUs) cost is taken directly from the final negotiated vehicle contract, and shown in **Exhibit D-4**. Similar to electrification, management oversight and TASI support costs are based on staffing plans and actual direct and indirect employee costs.

Exhibit D-4 – EMUs Budget⁶

Description of Work	Budget (in YOE USD thousands)
10 GUIDEWAY & TRACK ELEMENTS	-
20 STATIONS, STOPS, TERMINALS, INTERMODAL	-
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	2,247
40 SITEWORK & SPECIAL CONDITIONS	-
50 SYSTEMS	-
60 ROW, LAND, EXISTING IMPROVEMENTS	-
70 VEHICLES	625,994
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	5,257

⁶ The Authority is not providing funds for procurement of vehicles.

90 UNALLOCATED CONTINGENCY	28,687
100 FINANCE CHARGES	1,942
Total Project Cost (10 - 100)	664,127

E. Material Changes

Streets and Highways Code section 2704.08, subdivision (d)(1)(E) requires inclusion of a report describing any material changes from the plan submitted pursuant to subdivision (c) for this corridor or usable segment thereof.

In 2012, the Legislature passed SB 1029 appropriating \$600 million of Prop 1A proceeds from S&H Code section 2704.04 for the PCEP without a subdivision (c) Funding Plan. As there was no Funding Plan developed under subdivision (c) prior to the Legislature's appropriation, there are no material changes to report.

F. Terms and Conditions of Agreements

Streets and Highways Code section 2704.08, subdivision (d)(1)(F) requires a description of the terms and conditions associated with any agreement proposed to be entered into by the authority and any other party for the construction or operation of passenger train service along the corridor or usable segment thereof.

The Authority has entered into agreements with the PCJPB to support and implement the improvements necessary to fund, construct, and begin operating the blended system in the Peninsula Corridor. The PCJPB has executed the actual design-build contracts for the PCEP. The sections below describes some of the key terms and conditions of agreements governing the planning, construction, and operation of improved and electrified service over the Corridor, as described elsewhere in this Funding Plan.

Interagency Agreements

The Authority entered into a MOU in 2012 with eight other parties in the Bay Area to fund improvements in the Corridor. A supplementary seven party MOU was subsequently entered into in 2016. The Authority also entered into an additional MOU in 2013 with the JPB for the planning, environmental review, design, and ultimate construction of the improvements (2013 MOU). These MOUs describe the terms and conditions of the agreements entered into by the Authority and Caltrain for the construction and operation of passenger service in the Corridor. These MOUs also describe some of the terms and conditions of further agreements planned to be entered into by the Authority and Caltrain as improvements in the Corridor advance.

2012 MOU

In 2012, the Authority and eight other public entities entered an MOU to implement an early investment strategy to support the blended system in the Corridor. The key terms and conditions of the 2012 MOU are summarized below.

Exhibit F-1. 2012 Memorandum of Understanding – Key Terms and Conditions

2012 Memorandum of Understanding	
Key Elements	Key Terms
Parties to the Agreement	<ul style="list-style-type: none">• California High-Speed Rail Authority (Authority)• Peninsula Corridor Joint Powers Board / Caltrain (JPB or Caltrain)• Metropolitan Transportation Commission (MTC)• San Francisco County Transportation Authority (SFCTA)• San Mateo County Transportation Authority (SamTrans)

2012 Memorandum of Understanding

Key Elements	Key Terms
	<ul style="list-style-type: none"> • Santa Clara Valley Transportation Authority (VTA) • City of San Jose • City and County of San Francisco (CCSF) • Transbay Joint Powers Authority (TJPA)
<p>Purpose of Agreement</p>	<p>The parties will jointly support and pursue implementation of statewide high speed rail that utilizes a blended system and operational model on the Peninsula Corridor, running from Transbay Transit Center in San Francisco to milepost 51.4 at the Tamien Station in San Jose.</p>
<p>Scope of Projects</p>	<p>The parties will describe, identify and work to fully fund an interrelated program of projects including the following:</p> <ul style="list-style-type: none"> • Electrification Infrastructure Project • Advanced Signal System Project • Downtown Extension to the Transbay Transit Center (the Prop 1A designated northern terminus of high-speed rail) • New high-speed rail stations at San Jose Diridon Station and a Millbrae BART/Caltrain Station with a connection to San Francisco International Airport • Core Capacity project of needed upgrades to stations, tunnels, bridges, potential passing tracks and other track modifications and rail crossing improvements, including improvements and selected grade separations required to accommodate the mixed traffic capacity requirements of high-speed rail service and commuter rail services.

2012 Memorandum of Understanding

Key Elements	Key Terms
Funding Responsibilities	<p>The Authority and appropriate parties will obtain funding using mutually agreed strategies and notify each other if funding for the program is constrained.</p> <p>The following are the key funding plan components:</p> <p>Authority Funding Commitments</p> <ul style="list-style-type: none"> • \$600 million in Prop 1A funds • \$106 million in Prop 1A “connectivity” funds <p>Other Funding Commitments</p> <ul style="list-style-type: none"> • Variety of local, state, and federal funding sources to be obtained by the funding partners (described in Section B above based on updated information since 2012)
Environmental Clearance Responsibilities	<p>Caltrain has environmentally cleared the PCEP under CEQA, including updating the Caltrain Environmental Assessment/Final EIR completed in 2009</p>

2013 MOU

The Authority entered into the 2013 MOU with the JPB for the planning, environmental review, design, and ultimate construction of the improvements.

Exhibit F-2 2013 Memorandum of Understanding – Key Terms and Conditions

2013 Memorandum of Understanding	
Key Elements	Key Terms
Parties to the Agreement	<ul style="list-style-type: none"> • California High-Speed Rail Authority (Authority) • Peninsula Corridor Joint Powers Board / Caltrain (JPB or Caltrain)
Purpose of Agreement	<p>To form a new partnership for the planning, environmental review, design and construction of improvements in the Peninsula Corridor using the blended system (as previously defined).</p>
Scope of Projects	<ul style="list-style-type: none"> • Corridor electrification (as described in 2012 MOU) • CBOSS

2013 Memorandum of Understanding

Key Elements	Key Terms
	<ul style="list-style-type: none"> Accommodation of high-speed rail service
Environmental Clearance Responsibilities	JPB will be lead agency for all aspects of the CalMod program. The Authority will be lead agency for environmental clearance of blended system projects.
Delivery Responsibilities	<ul style="list-style-type: none"> JPB is the lead agency for implementation, final completion and delivery of the PCEP and CBOSS JPB is the lead agency for all aspects of the Corridor electrification project, including environmental clearance and arranging for design, construction, and implementation. Authority will assist to facilitate funding, environmental review, and project delivery. The parties will develop construction and implementation plans designed to preserve freight service in the Corridor.
Operational Responsibilities	The blended system will be developed while JPB rail service remains operational. JPB owns the Peninsula Corridor and will operate the commuter rail service on it.
Additional terms	<ul style="list-style-type: none"> To terminate previously entered-into agreements (2004 MOU and 2009 MOU) Authority to include 2012 and 2013 MOUs in its Business Plan To secure \$600 million of Prop 1A funds and \$106 million of Prop 1A connectivity funds under Senate Bill 1029 to enable PCEP and CBOSS to proceed Assure compliance with statutory and regulatory reporting requirements and deadlines from funding agencies JPB will independently support interests of the communities along the Peninsula Corridor through environmental, planning, design and construction.

Seven-Party Supplement to the 2012 MOU

In August 2016, the Authority and six parties – MTC, SFCTA, SMCTA, VTA, the City of San Jose, and the CCSF – entered into a Supplement to the 2012 MOU in order to fully fund the PCEP based on updated cost estimates.

Exhibit F-3 Seven-Party Supplement to the 2012 MOU – Key Terms and Conditions

Seven Party Supplement to the 2012 MOU

Key Elements	Key Terms
Parties to the Agreement	<ul style="list-style-type: none"> • California High-Speed Rail Authority (Authority) • Metropolitan Transportation Commission (MTC) • Peninsula Corridor Joint Powers Board (JPB) • San Francisco County Transportation Authority (SFCTA) • San Mateo County Transportation Authority (SMCTA) • Santa Clara Valley Transportation Authority (VTA) • City and County of San Francisco (CCSF)
Purpose of Agreement	<ul style="list-style-type: none"> • The parties will jointly support and pursue implementation of statewide high speed rail that utilizes a blended system and operational model on the Peninsula Corridor, running from Transbay Transit Center in San Francisco to milepost 51.4 at the Tamien Station in San Jose. • The parties to the Supplement commit to make funding available to fully fund the PCEP. • Supplemental MOU follows actual bids received and a 2014 cost estimate to update the 2008 cost estimate on which the 2012 Nine-Party MOU funding strategy for the PCEP was based.
Funding Responsibilities	<ul style="list-style-type: none"> • SMCTA will contribute an additional \$20 million • VTA will contribute an additional \$20 million • SFCTA and/or the CCSF will contribute an additional \$20 million • MTC will program \$28.4 million from Regional Measures 1 and 2 • JPB will contribute \$9 million from funding provided by formula to Caltrain through the LCTOP • The Authority will contribute an additional \$113 million • This funding is in addition to funding commitments previously made by these parties.
Removal of Funding	<ul style="list-style-type: none"> • The parties to the Supplement also agreed that, with the additional funding sources, \$125 million in FTA funds identified in the 2012 Early Investment Strategy funding plan will no longer be needed for the PCEP, and will instead be programmed by the MTC to the JPB to advance critical Caltrain state of good repair improvements through MTC’s established regional Transit Capital Priorities process.
Other Funding	<ul style="list-style-type: none"> • The Parties to the Supplement also support the PCJPB’s efforts to obtain \$647 million from FTA’s Core Capacity Grant Program for the PCEP as a regional priority. The \$647 million would help provide

Seven Party Supplement to the 2012 MOU

Key Elements	Key Terms
	funding needed for the PCEP, as well as provide funding to support a larger contingency set-aside for the PCEP program.
Other key terms	<ul style="list-style-type: none"> • If overall program costs require a financial commitment that is below the funding plan of \$1.980 billion, funding commitments from the parties to the Supplement will be reduced proportionally according to their respective additional shares as stated in the Supplement. • In the event the contract awards reflect a financial commitment that is above the funding plan of \$1.980 billion, or if the FTA Core Capacity funds are awarded at less than \$647 million, the parties to the Supplement will discuss with all parties to the 2012 Nine-Party MOU how to secure additional funding beyond what is presently identified, and/or discuss project scope adjustments to match to funding availability.

Agreement Regarding Commitments Toward Peninsula Corridor Electrification Project

In August 2016, the Authority Board approved Agenda Item 2 and Resolution 16-21 that provides further detail to the 7 Party Supplement with regard to funding arrangements from the Authority to Caltrain.

Exhibit F-4. Agreement Regarding Commitments Toward Peninsula Corridor Electrification Project – Key Terms and Conditions

Agreement Regarding Commitments Toward Peninsula Corridor Electrification Project	
Key Elements	Key Terms
Parties to the Agreement	<ul style="list-style-type: none"> • California High-Speed Rail Authority (Authority) • Peninsula Corridor Joint Powers Board / Caltrain (JPB or Caltrain)
Purpose of Agreement	<ul style="list-style-type: none"> • For the parties to reaffirm and further the Partnership Principles and Action Plan pertinent to implementation of the Early Investment Projects and implementation of the Blended System service according to a set of stated principles.
Funding Responsibilities	<ul style="list-style-type: none"> • The Authority will provide \$600 Million of Proposition 1A funding to the JPB to be used to cover eligible costs related to the implementation of the PCEP as contemplated by the 2012 Nine-Party MOU, Proposition 1A and SB 1029, provided the prerequisite requirements and intent of SB 1029 and related governing legislation

Agreement Regarding Commitments Toward Peninsula Corridor Electrification Project

Key Elements	Key Terms
	<p>are satisfied.</p> <ul style="list-style-type: none"> • Following execution of the contract with the PCEP contractor, \$600 million in Proposition 1A funding, as well as an additional \$113 million of funds available from Cap-and-Trade and/or other sources, shall be made available to the JPB on a reimbursement basis as contemplated by the 2012 Nine-Party MOU and SB 1029. • The parties recognize it is in the best interest of all parties involved in the funding of the project to understand and agree on cash-flow requirements and to identify all sources of funding, including federal, local and other state sources that can meet those needs. • JPB commits to working with regional and federal funding partners to obtain funding on a timely basis to address cash flow needs to avoid sole reliance on state funding. Pending availability of Proposition 1A funds, funding derived from other sources will be made available to JPB through the Authority to enable the State’s share of PCEP cash flow requirements to be met. • The estimated cash flow funding required from the State for the 2016-2017 fiscal year is \$117,460,000 with the understanding that July 1, 2016 constitutes the effective date for the commencement of the cash flow funding payments from the State. On an annual basis thereafter JPB will provide the Authority with the estimated cash flow funding needed to ensure requisite progress and ultimate completion of PCEP.
<p>Partnership Principles</p>	<ul style="list-style-type: none"> • The \$600 million in Proposition 1A funds will be dedicated to PCEP between the 4th and King Street Station in San Francisco to Tamien Station in San Jose, and will be implemented by PCJPB in a manner consistent with Proposition 1A and applicable legislation. • It is the shared goal of the parties to enable PCEP to be constructed in a manner that obviates the necessity for the Authority to have to make material changes to the PCEP infrastructure during the Authority’s future construction of the Blended System. • Blended System operations in the Corridor will consist primarily of a two-track system substantially within the existing JPB right-of-way. • The JPB and the Authority will collaborate to develop Blended System operations plans that comport with all applicable statutory and regulatory requirements. • The Authority and the JPB will continue to work cooperatively on

Agreement Regarding Commitments Toward Peninsula Corridor Electrification Project

Key Elements	Key Terms
	<p>additional improvements necessary to facilitate their respective operations in accordance with the provisions of SB1029 and the Authority’s business plans.</p> <ul style="list-style-type: none"> • The JPB will make its best efforts to complete the PCEP in amounts less than budgeted.

Project Management and Funding Agreement

In the coming months, the Authority and PCJPB will enter into a Project Management and Funding Agreement (PMFA) as required in SB 1029. The PMFA will spell out the Authority’s and PCJPB’s rights and responsibilities in the corridor in more detail and will require the PCJPB to report to the Authority on a quarterly basis to ensure that all bond-funded activities are within the scope and cost outlined in the agreement. The PMFA will be submitted to the Department of Finance for approval.

Construction Agreements

On July 7, 2016 the Caltrain Board of Directors approved \$1.25 billion in contracts to begin work on the PCEP. The contract for design and construction of the corridor’s electrification infrastructure was awarded to Balfour Beatty Infrastructure, Inc. The contract for the manufacture of high-performance electric trains was awarded to Stadler US, Inc.

Exhibit F-6. DB Contract - Electrification – Terms and Conditions

Design Build Contract	
Key Elements	Key Terms
Parties to the Agreement	<ul style="list-style-type: none"> • JPB/Caltrain • Balfour Beatty Infrastructure, Inc.
Scope of Services	<ul style="list-style-type: none"> • The project involves modernizing the Caltrain passenger rail service by converting from diesel powered locomotives to electrical power and upgrading the Caltrain right-of-way which would enable potential future operations of California High Speed Rail service on the same corridor. • The contract documents include commercial and technical provisions. Commercial provisions and certain technical requirements are prescriptive. The technical drawings and specifications set forth design concepts and baseline requirements for the project. These technical drawings and specifications are preliminary in nature and to

Design Build Contract

Key Elements	Key Terms
	<p>be developed to 100% Issued-for-Construction documents, sealed by the Engineer of Record. The Contractor shall assume full responsibility and liability with respect to final design, construction, installation, testing and commissioning of the electrification project in accordance with the requirements of the Contract Documents.</p> <ul style="list-style-type: none">• LNTP activities will include, but are not limited to, utility and geotechnical investigations, design development, and advancing certain critical procurements and contracts in support of construction. The Final Notice to Proceed will authorize all remaining scope of work activities including, but not limited to, final design, construction, resting and integration with a new electrified vehicle and existing diesel fleet of vehicles. This work will include new substations and overhead catenary wiring systems to electrify over 50 miles of the rail corridor at 25 kV AC, and necessary modifications to existing rail signaling systems to accommodate electrification. The DB services for electrification of the railroad between San Jose and San Francisco are for a not to exceed amount of \$696,610,558. Limited-Notice-to-Proceed - \$108,482,000 and Notice-to-Proceed - \$588,128,588.• The term of the contract, irrespective of the Contractor’s warranty obligations, is 1450 calendar days.• Date of overall substantial completion: 1330 calendar days after date of issuance of LNTP. Date of final acceptance: 120 calendar days after overall substantial completion.

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Key Elements	Key Terms
Caltrain's Role	<ul style="list-style-type: none"> • Caltrain will supply the following items and services as part of the new SCADA System: • Technical review of Contractor's designs. • Coordination of Contractor's activities with Caltrain's rail operations. • Participation in factory and field acceptance tests. • Communication circuits between interface locations and to corporate network equipment; connection of communications to modular distribution termination facilities and fiber nodes. • Conduct oversight testing at JPB discretion with Contractor support, as needed. • Support testing conducted by Contractor, as needed. • Facilitate systems integration with the EMU Contractor, CBOSS Contractor and the Rail Operations Control System (ROCs) Contractor.
Contractor's Role	<ul style="list-style-type: none"> • The Contractor's obligations include, but are not limited to, the responsibilities in the following list and those required to meet all requirements described in the Technical Provisions of the contract: • System engineering and project management. • Software analysis and programming. • Coordination of all Contractor activities to minimize interference with the concurrent work of other contractors along with the JPB's and Operating Railroad of Record's own forces when the Contractor's activities overlap the other contractors' activities. JPB may, at its sole discretion, assist in resolving disputes between contractors. • Supply, configuration, and integration of Substation Gateway, intelligent end device (IEDs), Remote Terminal Unit (RTU), human machine interface (HMI), peripherals, networking devices, signal and power cabling (except as noted being supplied by others), the interconnection of all Contractor-supplied equipment plus cabling to the termination panels where field communications lines will be terminated. • Operating system software and application software for all Substation Gateways, IEDs, RTUs, HMI, networking devices, and all other devices. • Provision of source code for all software produced specifically for the Contract. • Provision of source code or installation images sufficient to, together with the source code, regenerate complete, working copies of any

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Key Elements	Key Terms
	<p>system supplied under this contract.</p> <ul style="list-style-type: none"> • Configuration of all hardware and software for all Substation Gateways, RTUs, HMI, networking devices, IEDs, and all other devices. • Communication hardware and software interfaces to Contractor-supplied monitoring and control system equipment to allow the Substation SCADA system to communicate to the Traction Power devices located in the traction power facilities and the Office SCADA system. Where that interface to the Fiber Optic Communications System (FOCS) is not located at the substation, wayside power cubicle, or other field SCADA equipment location, the Contractor is responsible to design and install the necessary compatible branch circuits to connect to the existing FOCS splice enclosures or design new splice enclosures to break in to the existing FOCS cables, with prior written approval by the JPB, at locations required by the Contractor's design. • Shipment of JPB-supplied equipment, if any, to the Contractor's test facilities, and subsequent return shipment to the JPB with the SCADA System shipment. • Delivery of all equipment, installation, and startup for all sites. • Power distribution within Contractor-supplied equipment and between equipment enclosures. • Tests and inspections. • Maintenance of all hardware and software up to the availability test period. • Availability of service for all hardware and software, as installed, and the availability of standby parts for a 10-year period from the date of system acceptance. • Notification of field updates to all hardware and software for a 5-year period. • Instruction manuals, drawings, and all related documentation for diagnostics, maintenance, reference, and operations, including electronic copies for JPB-generated enhancements in the future.
<p>Liquidated Damages</p>	<p>There will be an assessment in the amount of \$1,000 per five-minute increment, or portion thereof, of interruption or delay greater than five minutes per train up to a cumulative daily maximum of \$50,000 for all trains. Contractor shall pay specified liquidated damage amounts, for</p>

Design Build Contract	
Key Elements	Key Terms
	<p>each calendar day of delay to the Contract Completion Milestone Date for which the Contractor is responsible.</p> <p>The liquidated damages amounts are independent of each other and are cumulative but not incurred simultaneously.</p> <p>Liquidated damages for late completion are calculated against each established Contract Completion Milestone Date, as that date may be extended by the JPB, and shall be the only damages available to the JPB with regard to delayed project completion. JPB capped the total, cumulative amount of liquidated damages for delay that the JPB may assess under the Contract at \$3,600,000.</p>

Exhibit F-7. EMU Contract – Terms and Conditions⁷

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Key Elements	Key Terms
Parties to the Agreement	<ul style="list-style-type: none"> • JPB • Stadler US, Inc. (Rolling Stock)
Purpose of Agreement	<ul style="list-style-type: none"> • Procurement of 96 electric multiple unit vehicles for a not to exceed amount of \$550,899,459. • The EMUs will consist of both cab and non-cab units configured as sixteen six-car trainsets. Power will be obtained from the overhead contact system (OCS) via roof mounted pantographs which will power the axle-mounted traction motors. The EMUs will replace a portion of the existing diesel locomotives and passenger cars currently in use by Caltrain.
Scope of Services	<ul style="list-style-type: none"> • The criteria and procedures described in the contract are specifically intended to apply to trainsets operated at speeds up to 125 mph. • In accordance with requirements in § 238.111, the equipment is subject to the prerevenue service acceptance testing. Pursuant to that section, a test plan is required for passenger equipment that has

⁷ Prop 1A funds will only be used for the electrification piece of PCEP and not the purchase of EMUs.

Design Build Contract

Key Elements

Key Terms

not been used in revenue service in the United States. Although the criteria and procedures are generally applied to the applicable individual structures of the trainset undergoing analysis, the overall intent of § 238.111 is to result in a cohesive design in which all parts function appropriately together. FRA notes that with respect to a trainset utilizing a crash energy management (CEM) design, testing of the components incorporated with any CEM system may also be performed as part of a prerevenue service acceptance testing program.

- These trainsets may require similar treatment under American Public Transportation Association (APTA) standards, such as APTA SS-C&S-016-99, Rev. 1 (updated 3/2004), Standard for Row to-Row Seating in Commuter Rail Cars, and the contract addresses these standards where appropriate.
- All designs, engineering, manufacturing, operations, materials, equipment, parts and labor required to properly, timely and to the satisfaction of JPB, provide the completed new vehicles and provide all other items of work indicated or referenced in the Contract Documents, including all alterations, amendments or extensions thereto made by Change Order; successfully complete all required tests and all reliability periods; remedy all defects which occur during, at least, the two (2) year warranty period for each of the new EMUs; and complete all necessary repairs and modifications resulting from the tests, the reliability periods and warranties as required by the Contract Documents.
- LNTF Scope of Work: initial work necessary to advance the contract within the scope of budgetary availability.
- Full Notice to Proceed Scope of Work: all remaining scope of work activities including the procurement of the base order of 96 vehicles, in accordance with the terms of the Contract. All work will be completed in full compliance with FTA requirements.

Design Build Contract	
Key Elements	Key Terms
Roles & Responsibilities	<ul style="list-style-type: none"> • JPB may, at its option, monitor any or all Contractor activities, review any or all designs, and inspect and test any or all equipment. • Stadler is responsible for delivery of a complete and properly functioning fleet of EMUs, and for all necessary resources and expertise to provide specified Maintenance Services for both the new EMUs and existing diesel rail vehicles if the Option is exercised by the JPB, all in accordance with the respective contract requirements. Stadler will perform all necessary activities required under the respective contracts including, but not limited to, management, administration, planning, design, documentation, manufacturing/assembly, service, quality control/assurance, systems integration, safety, scheduling, cost control, coordination, outreach, training, testing, commissioning, and warranty.
Liquidated Damages	<p>The Contractor understands that time is of the essence, and that the JPB will suffer significant damages if the schedule is not met. Because of the difficulty of determining at the time of contracting the actual damages to JPB resulting from Contractor's delayed performance, the parties agreed that the JPB may assess liquidated damages in the amounts set forth below:</p> <ul style="list-style-type: none"> • \$6,359 per calendar day for late delivery of the 1st trainset, • \$2,186 per calendar day for late conditional acceptance of each trainset including the 1st trainset. <p>The total amount for liquidated damages shall not exceed ten percent (10%) of the Total Base Order Price. JPB may deduct the sum of liquidated damages from payments or other amounts due under this Contract.</p>

Federal Funding

In February 2016, the Obama Administration allocated \$72 million in prior-year funding to the project and asked Congress for an additional \$125 million in the 2017 Federal Budget through the FTA Core Capacity Grant Program. These funds are part of a larger \$647 million request for a FFGA that is currently in the Engineering Phase and the FFGA is expected in early 2017. Contracts for the electrification project are structured so that full authorization to proceed with construction is issued following the approval of the FFGA by the FTA.

California High-Speed Rail Delivery Model Overview

The delivery model for Phase 1 of the California High-Speed Rail System is described in the Authority's 2016 Business Plan. It was developed based on best practices and industry feedback. After completion of the Valley to Valley Line and upon the commencement of high-speed service along the Peninsula Corridor it is contemplated that an operator running pursuant to the authority of the California High-Speed Rail Authority will pay to Caltrain an access fee for the right to operate the service. The details of a future agreement will specify the exact terms of compensation based on access and usage.

Appendix I – Anticipated Timing of Receipt of Funds

PCEP FUNDING PLAN—FOR PLANNING PURPOSES ONLY										11/7/2016
	FY16 and Prior	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	Total		
2036 Electrification Cost (Estimated)	68,806	296,516	366,412	323,667	197,406	61,772	1,547	1,316,125		
<i>Nine-Party MOU Funding</i>										
FTA Formula Funds (Prior Grants)	15,677	87,227	209,960	194,103	108,710	-	-	15,677		
Prop 1A	-	-	-	-	-	-	-	600,000		
Prop 1B FTMISEA	8,000	-	-	-	-	-	-	8,000		
Carl Meyer	-	4,000	4,000	4,000	4,000	-	-	20,000		
JPB Prior Local Funds	9,019	-	-	-	-	-	-	9,019		
JPB Members	36,110	29,869	16,673	22,255	-	-	-	104,908		
San Mateo	13,035	5,980	4,807	5,518	-	-	-	28,419		
San Francisco*	10,040	13,159	6,880	11,220	-	-	-	41,279		
San Jose	13,035	10,750	4,807	5,518	-	-	-	34,209		
Bridge Tolls	-	10,809	-	-	-	-	-	10,809		
<i>Seven-Party Supplemental Funding</i>										
HSR/State Non-1A funding	-	22,600	26,240	18,920	26,920	18,320	-	113,000		
Bridge Tolls—RM1	-	8,400	-	-	-	-	-	8,400		
<i>Potential Funding</i>										
FTA Core Capacity	-	133,611	109,539	84,389	57,776	39,452	1,547	426,313		
Total Funding	68,806	296,516	366,412	323,667	197,406	61,772	1,547	1,316,125		
2061 EMUS Cost (Estimated)	15,445	100,174	74,255	99,968	162,985	190,460	20,841	664,127		
<i>Nine-Party MOU Funding</i>										
FTA Formula Funds (MTC)**	5,234	22,620	56,880	70,857	96,014	61,875	1,521	315,000		
JPB Members	10,211	9,038	-	-	-	-	-	19,249		
San Mateo	4,925	6,928	-	-	-	-	-	11,844		
San Francisco	0,360	-	-	-	-	-	-	0,360		
San Jose	4,925	2,120	-	-	-	-	-	7,045		
<i>Seven-Party Supplemental Funding</i>										
Celtrain (ICTOP)	-	13,640	13,500	13,500	13,500	13,360	1,500	69,000		
San Mateo	-	1,940	1,800	1,800	1,800	1,680	-	8,000		
San Francisco	-	3,900	3,900	3,900	3,900	3,900	0,500	20,000		
San Jose	-	3,900	3,900	3,900	3,900	3,900	0,500	20,000		
Transit Interchange Rail Capital Program (TIRCP)	-	-	-	-	-	-	-	-		
RM1 and RM2	-	8,753	3,900	-	11,247	-	-	20,000		
<i>Potential Funding</i>										
FTA Core Capacity	-	25,932	3,875	15,611	42,224	115,225	17,820	220,687		
Total Funding	15,445	100,174	74,255	99,968	162,985	190,460	20,841	664,127		
PCEP Funding Total	84,251	396,690	440,667	423,635	360,391	252,232	22,387	1,980,253		
PCEP Cost Total	84,251	396,690	440,667	423,635	360,391	252,232	22,387	1,980,253		

Notes

*Prior SF Funding includes \$4M OMAQ transfer to JPB

**\$5.23M in FY16 5337 funds and \$22.62 in FY17 5337 funds transferred to South San Francisco Station Project and replaced with Local Funds

Appendix II – Source and Reference Documents

<u>Source and Reference Documents</u>	
2-Party Memorandum of Understanding dated 2013	Link
7 Party MOU and Funding Agreement	Link
9-Party Memorandum of Understanding dated 2012	Link
Caltrain Final Environmental Impact Report (Final EIR)	Link
Caltrain FEIR Appendix I, Ridership Technical Memorandum	Link
Caltrain Short Range Transit Plan	Link
High Speed Rail Authority, 2012 Business Plan	Link
High Speed Rail Authority, 2014 Business Plan	Link
High Speed Rail Authority, 2016 Business Plan	Link
July 2016 Monthly Progress Report	Link
Peninsula Corridor Electrification Project Quarterly Update #7	Link