Project Monitoring Report (PMR)
February 2023

Peninsula Corridor Electrification Project (PCEP)
San Francisco to San Jose, CA

Peninsula Corridor Joint Powers Board (JPB)/Caltrain
San Mateo, CA

March 23, 2023

PMOC Contract Number: 69319519D000019
Task Order Number: 69319520F300099 (TO99)

OPs Referenced: 01 - Administrative Conditions and Requirements
25 - Recurring Oversight and Related Reports

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Length of Time Firm Assigned to Project: 7 Years, 8 Months
Length of Time Person Assigned to Project: 7 Years, 8 Months

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1.0 Executive Summary

Kal Krishnan Consulting Services, Inc. (KKCS) is the Federal Transit Administration's (FTA) Project Management Oversight Contractor (PMOC) for the Peninsula Corridor Electrification Project (PCEP). The Peninsula Corridor Joint Powers Board (JPB) is the grantee which operates commuter rail service as Caltrain. The FTA awarded a $647 million Full Funding Grant Agreement (FFGA) to the JPB on May 23, 2017.

1.1 Project Description

The PCEP corridor is approximately 51 miles in length. This Core Capacity Improvement Project (CC) includes two (2) components: infrastructure and rolling stock. The infrastructure component is comprised of the construction of Traction Power Substations (TPSS), the connection of those substations to the local utility system, and the installation of the Overhead Contact System (OCS) over the tracks beginning at the 4th and King Caltrain Station in San Francisco and ending at Tamien Station in San Jose. The infrastructure work also includes modifications to the wayside signal system and grade crossing signals to accommodate the new electrified rail system. In addition, four (4) existing rail tunnels have been enlarged to accommodate the expanded clearance envelope of the electrified vehicles. An alignment map is provided as information in Attachment I.

The rolling stock component includes the procurement of ninety-six (96) Electric Multiple Unit (EMU) rail vehicles to replace approximately 75% of Caltrain's existing diesel rolling stock. The initial EMU order was supplemented in December 2018 when the JPB exercised an option to purchase an additional thirty-seven (37) EMUs, separate from the Core Capacity project. The resulting electrified fleet will consist of nineteen (19) seven-car trainsets. Caltrain's Central Equipment Maintenance and Operation Facility (CEMOF) is being modified to service the electrified vehicles.

The PCEP is part of a larger JPB initiative known as the Caltrain Modernization Program (CalMod). The CalMod program separately installed a Positive Train Control (PTC) system, which is an advanced signal system that includes federally mandated safety improvements. The PTC system is in operation and received final Federal Railroad Administration (FRA) approval on December 17, 2020.

1.2 Project Status

The FTA, based on the results of a December 2020 Risk Refresh effort, designated the PCEP an "At-Risk" project in a letter dated June 30, 2021. The FTA took this action because the PCEP has experienced significant cost overruns and schedule delays. The FTA requested that the JPB submit a Project Recovery Plan for the PCEP. The plan was originally due by October 8, 2021; however, the FTA agreed to defer receipt of the plan until the JPB completed a planned Risk Refresh and other project reviews following a change in the PCEP's leadership in September 2021. The JPB submitted its Recovery Plan to the FTA on April 1, 2022. The FTA and the PMOC have reviewed the draft Recovery Plan and provided comments to the JPB. The JPB submitted its final Recovery Plan to the FTA on September 30, 2022.

The JPB's Board approved an increased budget of $2.44 billion for the PCEP at a Special Board Meeting held on December 6, 2021. The increased budget is based on the successful negotiation in late 2021 of a global settlement with Balfour Beatty Infrastructure, Inc. (BBII), the electrification design-build (D-B) contractor, and a contemporaneous scrub of the PCEP budget. The increased budget supports the completion of the project and delivery of electrified service in 2024.

The PCEP is currently in construction and progress can be summarized as follows:

- Scope – The scope remains as planned.
- Schedule – The JPB is implementing a plan proposed by BBII which is intended to reach substantial completion of the contract by the end of the calendar year 2023, approximately four (4) months earlier than the contractual substantial completion date of April 1, 2024). This plan requires significant targeted (localized) changes to Caltrain's operating schedule, with support by bus bridges, to provide BBII with longer uninterrupted periods of access to the corridor. *JPB's analysis of BBII's December 2022 updated re-forecast schedule shows improvement on redefined Milestone 1 (Segments 3 and 4 complete). The projected completion date for revised Milestone 1 is now May 28, 2023, 28 days later than the April 30, 2023, reforecast date.* The project's critical path remains completion of the OCS work as a result of lower than expected OCS productivity.
- Cost – The FFGA budget is $1.931 billion in year of expenditure (YOE) dollars. The JPB completed a "budget scrub" following its global settlement with BBII, which produced a revised PCEP budget of $2.44 billion. The JPB approved this revised budget at its Special Meeting on December 6, 2021. This new budget reflects a total increase of $509 million from the FFGA budget. The JPB's revised budget, for FTA reporting purposes (excluding pre-Project Development costs), is $2,393,109,098. The JPB has received $410 million in additional funding from state and federal sources; this satisfies the funding gap created by the revised budget of $2.393 billion.
- Significant Project Activities and/or Key Milestones
    - *Initial implementation of the targeted weekend shutdowns, supported by bus bridges, occurred on February 11 and 12, 2023. BBII crews did not achieve the planned productivity on either of the first two weekends.*
    - *Clean-up activities following January's severe storms in the San Francisco Bay area continued to slow progress on the PCEP.*
    - *The failure of the short-circuit retest of TPSS-2 on February 4 and 5, 2023, has triggered additional investigations and other remedial activities. A target date for performing the next short-circuit retest is May 20 and 21, 2023, pending the completion of all necessary preparatory work.*
    - The JPB now has a total of four (4) trainsets on the property. The next pair of trainsets is being held at Stadler's Salt Lake City plant until spring 2023 because the JPB is not currently prepared to receive additional trainsets.
    - PG&E provided 115 kV power to the JPB's Traction Power Substation (TPSS) 2 in San Jose on August 27, 2022. The northern part of the single-phase study which relates to PG&E's delivery of power to TPSS 1 in South San Francisco has been completed and is under review by PG&E.
    - The March 10, 2022 incident that involved the collision of a southbound Caltrain passenger train with on-track construction equipment remains under investigation by the National Transportation Safety Board (NTSB).

1.3 Major Issues and/or Concerns

Summary of Issue/Concern	*Lack of Timely Contractor Schedules*
Date Identified	*January 2023*
Status	*BBII has failed to submit timely progress schedules and produce an acceptable re-forecast schedule for the remainder of the project.*
Project Sponsor Action	*The JPB requested that BBII prepare a re-forecast schedule that demonstrates how it will recover lost OCS productivity and complete the project in 2023. BBII's December 2022 progress schedule is now being used as a baseline for the re-forecast, but an up-to-date schedule is not expected until April 2023. The required monthly progress schedule updates are not being submitted on time. The JPB is elevating this issue with BBII's leadership.*
PMOC Recommendation	*The PCEP scheduling team must create its own as-built schedule in the absence of an accepted schedule from BBII, and use this schedule. and forensic scheduling tools, to accurately gauge BBII's performance and respond appropriately*.

Summary of Issue/Concern	Inadequate Contractor Preparation for Testing Activities
Date Identified	November 2022
Status	A short circuit re-test of the traction power system in Segment 4 failed a second time; an investigation is underway to determine the cause of this failure.
Project Sponsor Action	The JPB has initiated an audit of the entire Traction Power System. *The contractor has identified the root cause of the failure as lack of version control in its design documents.*
PMOC Recommendation	*Verify that the problem is remediated and hold the contractor responsible for correcting the problems in its quality program.*

Summary of Issue/Concern	Timely Completion of Overhead Contact System (OCS)
Date Identified	June 2022
Status	BBII, the Electrification contractor, is not installing the remaining components of the OCS at a satisfactory rate. Completion of the OCS is now the critical path to completion of the PCEP.
Project Sponsor Action	*The JPB has begun targeted weekend shutdowns supported by bus bridges to assist BBII in improving its productivity and reducing the need for roadway worker support. Thus far, productivity has not met projections.*
PMOC Recommendation	Continue to closely monitor BBII's productivity. Remove operating constraints and provide additional resources to improve productivity consistent with ongoing passenger rail operations. Closely review and analyze contractor schedules, routinely identify the controlling operation and prepare shadow schedules to assess responsibility for potential or actual delays.

1.4 Status of Key Indicators Dashboard

KEY INDICATORS DASHBOARD (POST-GRANT STATUS)					
Project Sponsor:	Peninsula Corridor Joint Powers Board (JPB)				
Project Name:	Peninsula Corridor Electrification Project (PCEP)				
Date:	*February 28, 2023*				
Project Detail					
Oversight Frequency:	Monthly				
Element	**Status**			**Prior Status (G/Y/R)**	**Issue or Concern**
	G	**Y**	**R**		

KEY INDICATORS DASHBOARD (POST-GRANT STATUS)					
PMP		🟡		🟡	The PMP requires updating to address testing and commissioning. An updated PMP has been received and is under review.
MCC	🟢			🟢	New resources are being deployed but the reconfiguration of the PCEP team is not complete, however, improvements are noted.
Cost	🟢			🟢	The JPB has received $410 million in additional funding from state and federal sources. This satisfies the requirements of the revised $2.44 billion budget.
Schedule		🟡		🟡	The JPB is implementing a plan proposed by BBII which is intended to reach substantial completion of the contract by the end of the calendar year 2023. This plan is intended to improve OCS productivity; however, results to date have not met expectations. The failure of a second short-circuit re-test places additional pressure on the proposed completion schedule.
Quality		🟡		🟡	The failure of BBII's second short-circuit test of the Segment 4 TPS has raised significant concerns. Some uncertainty related to the Electrification contractor's Buy America compliance. Additional documentation is being provided.
Safety	🟢			🟡	*There have been no recordable incidents in 2023 BBII's Recordable Incident Rate for 2023 is below the national average.* The March 10, 2022 incident remains under investigation by the NTSB.
Risk	🟢			🟢	*$410 million in additional funding for the PCEP has been confirmed.*
Key Indicators Legend					
Green	Satisfactory: No Corrective Action necessary.				
Yellow	Caution: Risk/Issues exist. Corrective Action may be necessary.				
Red	Elevated for immediate Corrective Action: Significant risk to the health of the project.				

1.5 Core Accountability Items through January 31, 2023

Project Status: In Construction		Original (FFGA)	Current Forecast [1]	PMOC Assessment of Current Forecast
Cost	Cost Estimate	$1,930,670,934	$2,393,109,097	Forecast based on JPB's approved budget, adjusted to remove pre-PD costs.
Contingency	*Allocated Contingency*	$152,913,317	*$58,568,558*	Current contingency usage is being tracked closely and has been modest since the global settlement.
	Unallocated Contingency	$162,620,294	*$22,977,405*	
	Total Contingency	$315,533,611	*$81,545,962*	
Schedule	Required Completion Date	August 22, 2022	December 31, 2024	Current forecast is based on the JPB's Recovery Plan submitted to the FTA on September 30, 2022.

Project Progress		Amount ($)	Percent of Total
Total Expenditures [4]	Actual cost of all eligible expenditures completed to date [5]	*$1,947,778,556*	*81.39%*
Planned Value to Date [2]	Estimated value of work planned to date [3]	*$1,925,397,857*	*80.46%*
Actual Value to Date	Actual value of work completed to date [3]	*$1,399,237,256*	*58.47%*

Contracts Status	Amount ($)	Percent

Total Contracts Awarded	Value of all contracts (design, support, construction, equipment) awarded; % of total value to be awarded [6]	*$2,241,602,310*	*96.97%*
Construction Contracts Awarded	Value of construction contracts awarded; % of total construction value to be awarded [5]	$1,844,666,389	100.00%
Physical Construction Completed	Value of physical construction (infrastructure) completed; % of total construction value completed	*$1,399,237,256*	*75.85%*

Rolling Stock Vehicle Status	Date Awarded	No. Ordered	No. Delivered
Electric Multiple Unit (EMU) commuter rail vehicles	08/2016 (A)	133	28

Next Monthly Meeting Date:	*March 14-17, 2023*
Next Quarterly Review Meeting Date:	*April 13, 2023*

NOTES:

[1] "Current estimate" is based on the re-baseline budget adopted by JPB Board in December 2021. FFGA Budget is currently pending approval of the FTA Remediation Plan and adoption.

[2] "Planned Value to Date" is based upon the Program Schedule and Estimate (Rev. 4B) that was updated in October 2017 to reflect the FFGA delay.

[3] "Work" is defined as all construction as well as non-construction scopes (all project costs). Excludes unbudgeted upfront cost for PG&E's share of substation improvements prior to PG&E reimbursement.

[4] "Actual Cost" is determined as follows:

Costs: Inception - January 2023	$1,965,316,938
Pre-FFGA Costs	($49,581,599)
Post-FFGA Costs	$1,915,735,339

[5] "Percentage" is calculated based on a project new estimate of $2,393,109,097

[6] "Percentage" is calculated based on Contracts as budgeted in the Re-Baseline Budget excluding remaining forecasted contingency:

Budgeted Contracts (Pre-FFGA) - Re-Baseline Budget	$2,442,690,697
Pre-FFGA Costs	($49,581,599)
Forecasted Remaining Contingency	($83,541,344)
Budgeted Contracts (Post-FFGA)	$2,309,567,753

[7] "Total construction contracts awarded to date (construction & vehicle contracts only)" includes design costs and executed change orders. Does not include Re-Baseline until executed for Contract amendment.

[8] "Percentage" is calculated based on the total of the executed contract value of construction contracts and forecasted (including Re-Baseline items) changes to the contracts:

Executed value of Construction Contracts	$1,844,666,389
Forecasted Construction Contract Changes	$0
Forecast of Value of Construction Contracts	$1,844,666,389

Grant Information

Dollars in thousands reported as of December 31, 2022; this information is updated quarterly.

FAIN (Source)	Funds Committed*	Funds Disbursed	% Disbursed
Local	$1,206,521	$921,369	76%
Federal	$986,565	$867,635	88%
Total	**$2,193,086**	**$1,789,005**	**82%**

*Definitions from Guidelines and Standards for Assessing Local Financial Commitment, FTA, June 2007

[1]Includes $150.0 million in Measure RR Tax-Exempt Bonds and $60M to reflect the Measure RR Capital Set Aside.

[2]Includes $52.415 million in ARPA Funds received.

2.0 PMOC Observations and Findings

This progress report covers the period from February 1, 2023, through February 28, 2023. The information contained in this report is based on the PMOC's participation in virtual status updates

held on February 21-24, 2023, virtual project meeting attendance, document reviews, telephone conversations, and general interaction with the project sponsor's personnel.

2.1 Summary of Monitoring Activities

The PMOC continues to monitor the PCEP on a regular basis through the activities described above and prepares routine monitoring reports on the project. The FTA designated the PCEP an at-risk project and the PMOC is monitoring the project on a monthly basis; quarterly oversight will resume once the JPB has satisfied the FTA's concerns related to the risk factors that led to the at-risk designation.

The PMOC's oversight will also address the following activities.

- *The PMOC has completed its review of the JPB's Recovery Plan submitted to the FTA on September 30, 2022. The FTA is completing its review of the PMOC's final draft Recovery Plan Review Report.*
- The PMOC is monitoring the implementation of the plan proposed by BBII to achieve contract completion by the end of calendar 2023.
- The PMOC will continue to closely monitor the PCEP's schedule, scheduling resources, and schedule management practices, including the current performance of BBII and its sub-contractors.

  The PMOC is continuing the preparation of a modified Readiness for Electrified Testing review focused on the initial electrification of Segment 4 and the start of live-wire testing and commissioning of the first EMU trainset. This review is being performed under a Programmatic Task Order.

  The completion of this review was paused because the planned electrification of Segment 4 was delayed by the lack of complete documentation and the availability of electric power. PG&E provided 115 kV power to Traction Power Substation (TPSS) #2 on August 27, 2022. Sectionalization testing of Segment 4 has been completed, however, the subsequent short-circuit test was not successful and must be redone. A second short-circuit re-test was also unsuccessful on February 4, 2023, and all downstream activities leading to live-wire testing of the EMUs are now on hold. *The PMOC's opinion is that the power-up of the first EMU trainset will take place in May 2023.*
- Monitoring the progress of the PCEP team as it continues to implement the following initiatives put in place by CalMod's Chief Officer (CO):
  - Implementing changes in the conduct of business, including routine partnering activities, with Balfour Beatty Infrastructure, Inc. (BBII), the Electrification design-build contractor, and its sub-contractors and suppliers.
- The PMOC initiated a second Buy America review related to materials used by the JPB and its contractors for the infrastructure elements of the PCEP. The PMOC continues to monitor the JPB's quality team's progress in obtaining the appropriate documentation from BBII to complete the current review.
- *The PMOC has completed the final draft of its Global Settlement Review Report and the report is being reviewed by the FTA.* The results of this effort informed the PMOC's opinions and recommendations related to the JPB's Recovery Plan.

2.2 Oversight Triggers

The FTA, as noted in Section 1.2 above, designated the PCEP an At-Risk project because of cost overruns and schedule delays. As a result of the FTA's at-risk designation, the PCEP is now on a monthly oversight schedule until the uncertainties are resolved to the satisfaction of the FTA. The JPB, as noted above, formally adopted a revised budget for the PCEP at its meeting on December 6, 2021; the revised budget is based on project completion and the initiation of electrified rail service in 2024. The JPB submitted its final Recovery Plan to the FTA on September 30, 2022. *The FTA, as noted above, is completing its review of the PMOC's final draft Recovery Plan Review Report.* The PMOC will continue to monitor and report on the JPB's progress relative to its adopted plans and schedule.

2.3 Project Management Plan (PMP) and Sub-Plans

The JPB delayed updating its PMP for the testing and commissioning phase of the project, as well as its Rail Fleet Management Plan (RFMP) and Quality Management Plan (QMP) because of the change in project leadership. The JPB provided its updated PMP in June 2022 and an updated QMP in July 2022; the PMOC is reviewing these plans.

The PCEP's Rail Activation Committee's (RAC) activities are currently focused on the testing, documentation, and training required to complete the electrification of Segment 4 and provide power to the EMUs. The PMOC continues to monitor and support this work in conjunction with its work on a modified OP-54 Readiness for Service review as noted above.

2.4 Management Capacity and Capability

The PCEP organization continues to make minor adjustments to its staffing to respond to developments in construction and the testing and commissioning activities. The leadership of the PCEP team is conducting a position by position assessment of its consultants and contractors.

- ***PMOC Comment:*** The increase in the PCEP's staffing levels, particularly the addition of both professional and administrative personnel is encouraging. A strong team effort will be required to complete the remaining electrification contract work by December 31, 2023. The PMOC is pleased by the recent increase in scheduling resources. The PMOC continues to encourage the PCEP team to adopt best scheduling practices such as daily identification of the controlling operation to avoid future schedule related claims.

2.5 NEPA Process and Environmental Mitigation

The JPB continues to work with the FTA and the State Historic Preservation Office (SHPO) to extend the Programmatic Agreement (PA) that governs the PCEP's related activities. *The SHPO provided comments on the draft PA and the document was revised and re-submitted to the FTA in February 2023. The FTA continues to work with the JPB to resolve the remaining comments.* The JPB and its contractor continue to follow the requirements and processes contained in the original agreement.

The JPB also continues to monitor the compliance of its construction contractors with the requirements of its FFGA and the supporting environmental documents. Annual surveys are being conducted as required. The PCEP reports that tree pruning and removal are approximately 75% complete. *The number of replacement trees is higher than expected because of minor shifts in the location of the OCS.*

The recent severe weather in the Caltrain corridor caused several large trees to fall resulting in damage to the OCS. The JPB and its consultants are conducting a corridor-wide inventory to identify potentially dangerous trees and developing a tree management plan to address this issue.

2.6 Project Delivery Method and Procurement

The JPB completed all major procurements as of September 2019.

Consultant Contracts

The JPB awarded contracts in early 2014 for Program Management Consultant Services; EMU Vehicle Consultant Services; and Electrification Services. The JPB awarded a five-year contract to Jacobs Project Management Company (Jacobs) of Oakland, CA in 2019 to support electrification construction, the tunnel notching contract, modifications to the CEMOF, reconstruction of the Santa Clara Drill Track, installation of mini-high block platforms, and other work, as needed.

Electrification Design-Build Contract

JPB is using the Design-Build (D-B) project delivery method for the electrification and related facilities. BBII was selected as the D-B Contractor and was provided NTP in June 2017. Design work is complete on the OCS and the TPS elements of the project. Design continues on the signal related work which is now on the PCEP's near-critical path. The BBII global settlement and its re-baselined schedule prioritizes completion of the signals and supporting work and includes incentives for early completion. Construction activities, including testing and commissioning of installed facilities, are underway in all disciplines and all segments of the corridor.

Supervisory Control and Data Acquisition (SCADA) Equipment

The JPB executed a sole-source contract with ARINC, Inc., for the supply of SCADA equipment in September 2017. The SCADA contract is being managed by the Electrification consultant and installation of the SCADA equipment is being performed by BBII under the Electrification contract. The equipment will be used to control the traction power system including the traction power substations (TPS), wayside power cubicles (WPC), and the OCS. SCADA will be integrated with the base operating system for Caltrain Operations and Control, which is the Rail Operations Center System (ROCS). A separate control console will be established for the Power Director. The hardware has been installed in the Central Control Facility (CCF) and the back-up CCF (BCCF) and testing and training activities are in progress. The JPB completed the negotiation of a $1.04 million modification of the SCADA contract to align its completion with the new project schedule.

Tunnel Notching, OCS Installation, and Drainage Improvements

A contract was awarded to ProVen Management, Inc. of Oakland, California, for Tunnel Notching and Drainage Improvements on the tunnels in Segment 1 of the PCEP corridor. The contract consists of two (2) main elements: notching of the four (4) tunnels to increase clearance for the new EMU vehicles; and drainage improvements in tunnels 1 and 4 for the benefit of Caltrain operations. The drainage improvements were performed as a Concurrent Non-Project Activity (CNPA) and the work was paid for by Caltrain. The JPB issued a Notice to Proceed to the contractor on October 6, 2018. Installation of the Overhead Contact System (OCS) in the tunnel bores was later added by Change Order. Inspection of the OCS in the tunnel bores has been completed and the contractor has demobilized.

The JPB has negotiated a settlement with ProVen that covers both the Tunnel Notching and CEMOF Modifications contracts. Final testing of the OCS in the tunnel will now be performed by BBII. Close-out of both ProVen contracts is in progress.

Used Electrified Locomotives

The JPB acquired and overhauled two (2) used AM-7 electrified locomotives to perform initial testing of the electrification system. The locomotives were placed in long-term storage after their

delivery in June 2019 until needed for testing of the electrified system. The JPB continues to prepare the electric locomotive for use in the initial testing of the electrified OCS in Segment 4. It remains unclear what role the electric locomotive will play in the start-up and testing of the electrified system.

CEMOF Modifications

The JPB awarded a contract to ProVen Management, Inc. in the amount of $6,550,777 to modify the Central Equipment Maintenance and Operations Facility (CEMOF) to accommodate the new EMUs. ProVen was issued a full Notice to Proceed (NTP) on September 16, 2019. The CEMOF contract was the last of the PCEP's major construction contracts. The JPB, as noted above, has negotiated a settlement with ProVen that covers both the Tunnel Notching and CEMOF Modifications contracts. ProVen completed work on the CEMOF modification on July 13, 2022.

PG&E Interconnection Construction

The JPB executed a modification of its Master Agreement with PG&E to construct the interconnections between PG&E's two (2) substations and the JPB's two (2) corresponding TPSS. Construction of the interconnection between PG&E's FMC substation in San Jose and the PCEP's TPSS 2 was completed on January 18, 2021.

The Transmission Load Operating Agreement (TLOA) between PG&E and the JPB was executed following the completion of the southern section of the Single-Phase Study. Energization of the PG&E interconnection and TPSS-2 occurred on August 27, 2022.

The interconnection between PG&E's East Grand Substation in South San Francisco and the PCEP's TPSS 1 is complete and awaiting completion and testing of TPSS-1. Energization of TPSS-1 will occur following the completion of the northern section of the Single-Phase Study and subsequent execution of the TLOA between the JPB and PG&E for TPSS-1. *The combined Single-Phase Study is complete and undergoing final review by PG&E.*

Current Procurements

The JPB continues work on the Request for Proposal (RFP) for long-term maintenance of the TPS and OCS systems. The JPB is planning to release this procurement in March 2023.

2.7 Design

BBII is responsible for the Final Design (FD) of the electrification and related facilities under the terms of its D-B contract with the JPB. PGH Wong Engineering, Inc., is the Engineer of Record (EOR) for the electrification work. Alstom is the EOR for the signals work including 2SC. All OCS and TPS design work is complete. The following issues remain active at this time:

- *BBII and its sub-contractors have identified problems with version control of its design documents as a root cause of the recent failure of short-circuit testing on TPSS-2. A major effort is underway to purge all incorrect versions from BBII's document control system and assemble a conformed set of design documents.*
- The JPB continues to pursue the resolution of its discussions with UPRR regarding protection at the UPRR's Reed Street crossing in Segment 4. The JPB is hopeful that a viable solution has been identified. Modifications to plans for the crossing require approval by the City of Santa Clara and a GO-88B permit from the CPUC.

2.8 Value Engineering and Constructability Reviews

The project sponsor did not undertake a formal VE effort. However, the PCEP team undertook a significant cost reduction effort in late 2014 which identified an estimated $84.3M in potential cost

savings achieved by eliminating or deferring certain tasks previously included in the baseline program. In addition, the procurement process for the Electrification D-B contract included the submission of alternate technical proposals (ATPs) to reduce costs or improve the schedule. In addition to those ATPs that were incorporated into the Electrification contract, that contract contains a Value Engineering Change Proposal (VECP) clause whereby any savings that result from an accepted VECP are shared by the contractor and the JPB.

2.9 Real Estate Acquisition and Relocation

The project is being constructed primarily in the existing Caltrain corridor on rights-of-way (ROW) controlled by JPB/Caltrain. The PCEP is acquiring real estate for three (3) primary purposes: (1) for the placement of Overhead Contact System (OCS) poles; (2) for the two (2) primary Traction Power Substations (TPSS); and (3) to provide electrical clearance and safety zones for the OCS wires.

Real Estate Activities

The large majority of real estate activities have been completed. The remaining challenges facing real estate are any design changes that would impact already acquired properties and design changes requiring new or re-defined acquisitions. Potholing for OCS foundations is now complete.

- Bayshore Property (Segment 1 South of tunnels) – The parties have reached a final agreement on price and construction is underway using permits issued by the owner, pending completion of the transaction. The JPB reports that it has addressed the owner's comments and provided copies for the owner's review. The JPB will be requesting the FTA's concurrence on the transaction in the near future.
- Staff continues to review electrical safety zones (ESZs) for potential changes due to OCS pole relocations.
- Staff continues to work with PCEP's internal signal team and BBII's signal team to identify the need for potential new Real Estate interests.

2.10 Third-Party Agreements and Utilities

A significant number of third-party agreements were required to support the PCEP. These agreements are grouped into the following general categories, with status comments as appropriate to each:

Jurisdictional Agreements for Construction and Maintenance

The JPB has executed all agreements except the one with the Town of Atherton (Segment 2), which is no longer being pursued. The Town of Atherton must issue traffic control permits to the contractor, and the Town staff has been cooperative to date.

Jurisdictional Agreements for Exercise of Eminent Domain Powers

The JPB has executed agreements with the Santa Clara Valley Transportation Authority (VTA) and the San Mateo County Transportation District (SamTrans) under which the VTA and SamTrans will exercise eminent domain authority on behalf of the JPB, when such action is required, to acquire the real property rights located in the respective counties for the PCEP. The City and County of San Francisco (CCSF) declined to approve an agreement for use of its eminent domain powers on behalf of the PCEP.

Utility Relocation Agreements

The JPB's right to relocate utilities that exist within its PCEP corridor exists by virtue of the property rights it acquired when it purchased the corridor from the Southern Pacific Transportation Company (SP) in November 1991. The JPB has the right to cause the relocation of both overhead and underground utilities to accommodate its railroad activities upon thirty (30) days' notice to the utilities at the utilities expense. The JPB reports the following status related to third-party utility work:

The JPB also has in place or is negotiating specialized agreements with the following entities:

Pacific Gas & Electric (PG&E)

PG&E will supply power from two (2) existing substations to the new PCEP Traction Power System. Both substations must be modified to provide the required power. The JPB has executed a Master Agreement with PG&E as well as Supplements 1 through 5 to that agreement. Supplement 4, which includes the cost of constructing the substation modifications, was fully executed on October 18, 2018. The parties disagreed on the allocation of costs for the work, and following discussions

between the parties, PG&E filed an application with the CPUC for a cost allocation plan. The CPUC's Administrative Law Judge announced a decision on May 7, 2020, that adopted a modified order affirming the cost allocation principles agreed to by the JPB and PG&E. The cost allocation process requires audited costs for PG&E's sub-station improvements. Those costs were expected to be available for inclusion in PG&E's 2023 General Rate Case which was filed in 2021. However, due to construction delays, only approximately 95% of audited costs are available. PG&E petitioned the CPUC to consider including the 95% of costs that have been audited in PG&E's current rate case. That petition was positively received by the CPUC. *The JPB requested that PG&E make earlier payments of the funds that are due to the JPB under the cost allocation agreement to improve the PCEP's cash flow position; no progress is reported on this issue.*

The Transmission Load Operating Agreement (TLOA) between PG&E and the JPB has been executed for TPSS #2 in San Jose. As noted above, a second TLOA is required prior to PG&E's energization of TPSS-1.

BBII must install some OCS poles and wires in close proximity to PG&E distribution lines that run parallel to the JPB's property. PG&E crews previously protected its lines and permitted the PCEP work to be performed with appropriate safeguards; however, that is no longer the case. PG&E is now insisting that their distribution lines must be shut down before BBII can perform its work. PG&E now requires a formal request and must schedule a contractor to perform the shutdown work. If PG&E is unable to perform that work in time, OCS installation will be further delayed and installation efficiency will also be affected. It now appears that PG&E will not be able to provide the requested support in Segments 1 and 2 until March 2023. *The JPB and BBII are now meeting weekly in an effort to improve the resolution of issues and increase BBII's productivity.*

California Public Utilities Commission (CPUC)

The CPUC is the FTA's Certified State Safety Oversight Agency (SSOA) for the State of California and also has responsibility for grade crossing safety in the state. The JPB has worked with both CPUC and the FRA to develop the 2SC solution to provide the required grade crossing warning time after the system is electrified. CPUC and the FRA have been observing the initial cutovers at the signal locations in Segment 4 and have been satisfied with the results to date.

The JPB must file General Order (GO) 88B forms for each modified crossing for approval by the CPUC; these plans are developed in conjunction with the local jurisdictions. The JPB has thus far submitted applications for twenty (20) crossings, and the CPUC has approved all of those. The JPB has recently identified the need for additional GO88B modifications related to installing articulated crossing gates at certain grade crossings with very long gate arms. The articulated gate arms are to avoid conflicts with the OCS. The FRA does not approve the crossings but has both regulatory and enforcement authority if the crossings do not perform as required by its regulations.

Union Pacific Railroad (UPRR)

The JPB has a continuing relationship with the UPRR, which is a tenant and operates service on tracks owned by Caltrain in the PCEP corridor; Caltrain operates service on tracks owned by the UPRR south of the PCEP corridor.

California High Speed Rail Authority (CHSRA)

The California High-Speed Rail Authority (CHSRA) is a funding-partner for the PCEP and proposes to operate in blended service with Caltrain in the PCEP corridor in the future. The JPB has relocated some OCS poles to permit future curve-straightening by the CHSRA without impacting the electrification system. Straightening of some curves will allow the CHSRA to achieve higher operating speeds. All costs associated with the pole relocation work will be paid for by the CHSRA.

Representatives of the CHSRA are now participating regularly in a variety of PCEP meetings. The JPB has submitted the final Project Remediation Plan for the CHSRA; the plan is a requirement of the funding agreement between the parties. The plan was reviewed by the CHSRA and appropriate portions of the plan were incorporated into the Recovery Plan submitted to the FTA on September 30, 2022.

Federal Railroad Administration (FRA)

The FRA has authority over the JPB's rail operations. As noted above and elsewhere in this report, the JPB is coordinating with the FRA on several issues, including technical issues related to the EMUs and implementation of the 2SC issue. The JPB's PTC program has received FRA approval. Issues related to the EMU's are discussed in Section 2.12 of this report. The JPB continues to hold monthly conference calls with the FRA to discuss EMU issues, and another call to discuss any open questions related to the 2SC implementation.

Independent of the PCEP, the JPB filed a test request with the FRA on November 29, 2021, for the installation of a Crossing Optimization Project. The project proposes to modify grade crossing controls to improve gate down-time performance. If the test request is approved, the modification of the initial crossings will be performed following the installation and cutover of the 2SC equipment by BBII. The FRA advertised the JPB's request for public comment in December 2021, however, no decision has yet been published.

2.11 Construction

The JPB provided the following information on infrastructure construction activity.

- PG&E delivered 115 kV of power to TPSS-2 for the first time on August 27, 2022. Testing and commissioning of high-voltage equipment continues in Segment 4 and sectionalization tests have been completed. The short-circuit test on November 4 was unsuccessful and a thorough review of the TPS was initiated to identify the root cause of the failure. A short-circuit re-test was performed on February 4, 2023, and was unsuccessful. *Investigations have shown that there were conflicting drawings being used to install the equipment which resulted in the most recent test failure. A major effort is underway to address this problem. A target date of May 2021 has been set for the short-circuit re-test contingent on the satisfactory completion of all requirements.*

Overhead Contact System (OCS)

Completion of the OCS remains on the project's critical path. BBII has brought additional on-track equipment from the United Kingdom (UK) and has fielded additional crews to increase productivity. Timely completion of the OCS will require sustained productivity at levels higher than those previously achieved on a continuing basis. *The JPB has begun implementing a plan proposed by BBII to achieve substantial completion of the contract by the end of the calendar year 2023. BBII's contractual Substantial Completion date is April 1, 2024, and the contractual Final Completion date is July 31, 2024. This plan requires 31 weekend shutdowns of rail service at targeted locations, with support by bus bridges, to provide BBII with longer uninterrupted periods of access to the corridor. The first weekend outage and bus bridge took place on February 11 and 12, 2023.*

OCS progress as of February 20, 2023:

- *69 poles remain to be installed out of the 2585 required (2.7%).*
- *452,241 linear feet (LF) of wire remains of the 1,511,870 LF required (3.0%).*

- *The anticipated completion date for construction and component testing of the OCS system has improved and is now October 25, 2023.*
- Removal of metallic materials at the CEMOF and grounding of installed service equipment is in progress.

- Sections of the installed OCS located near the south end of Segment 4 have been temporarily removed to facilitate the replacement of the Guadalupe River railroad bridge. Replacement of the bridge is a Caltrain capital project and the required in-water work must occur within a specified environmental window. Testing of the southernmost OCS and TPS in Segment 4 was expected to be complete before removal of the OCS was required; however, due to the unsuccessful short-circuit tests, that will now occur after the OCS is restored in September 2023. *A revised test plan for Segment 4 is being developed to address this new situation.*

Traction Power System (TPS)

- Traction Power Substation (TPSS) #2 was energized on August 27, 2022. Sectionalization testing of Segment 4 has been completed. Short-circuit testing of Segment 4 in November 2022 was unsuccessful, and a re-test on February 4, 2023, also failed. *Investigations identified conflicting drawings as the root cause of the failure. A major effort is underway to resolve the problem and prevent a reoccurrence,*
- *The JPB now reports that as of February 10, 2023, TPS 1 is 94% complete and TPS 2 is 99% complete.* The Switching Station is 99% complete; and of the seven (7) Paralleling Stations, all but PS 3 are at 90% complete. Punchlist work is in progress on TPS 2 and PS7.

Signal System

Completion of the signal system is progressing well. Once the new signal equipment is in place, the system must be electrically connected or "cut over" to the new equipment. *A total of seven (7) signal cutovers remain, each typically involving numerous signals and control points.* A control point (CP) is a named location where tracks merge or cross. The JPB expects to complete all remaining signal cutovers in late 2023. Early completion of the signal cutovers is incentivized (See Table 5) in the global settlement. The final cutover in Segment 2 was completed in mid-December 2022. *Segment 3 Phase 4, the first cutover in Segment 3, was completed the weekend of February 18, 2023.* Table 1 shows the proposed dates for the completion of the remaining signal cutovers.

Table 1 – Signal Cutover Schedule

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Total Float
Total		249	249	2-4-23	10-10-23	95
Signals Construction		249	249	2-4-23	10-10-23	95
Signals Construction		249	249	2-4-23	10-10-23	95
Segment 1		110	110	6-23-23	10-10-23	95
TS-01-16150	Segment 1 Phase 3 Cutover	3	3	6-23-23	6-25-23	95
TS-01-16140	Segment 1 Phase 2 Cutover	5	5	8-18-23	8-22-23	95
TS-01-16060	Segment 1 Phase 1 Cutover	5	5	10-6-23	10-10-23	95
Segment 3		71	71	2-18-23	4-30-23	-6
TS-03-16081	Segment 3 Phase 4 Cutover	2	2	2-18-23	2-20-23	-6
TS-03-16051	Segment 3 Phase 1 Cutover	14	14	4-16-23	4-30-23	-6
TS-03-16061	Segment 3 Phase 2 Cutover	14	14	4-16-23	4-30-23	-6
TS-03-16071	Segment 3 Phase 3 Cutover	14	14	4-16-23	4-30-23	-6
Segment 4		2	2	2-4-23	2-5-23	83
IMP.LTR-0337.1030	Reed Street Cutover - 4B	2	2	2-4-23	2-5-23	83

JPB reported the following signal activity.

- Installation of conduit and foundations for signal and wayside power cubicles (WPC) continues in all Segments. Timely installation of power drops for WPCs is a concern, and the JPB is looking for opportunities to connect new WPCs to existing power sources whenever possible.

Supervisory Control and Data Acquisition (SCADA)

- The remaining open items from the Systems Acceptance Testing have been completed.
- The SCADA software has been installed and tested but is not yet operating in production mode.

Concurrent Non-Project Activities:

The JPB has an on-going capital construction program that includes several projects that will share some common elements with the PCEP. These projects have been designated as Concurrent Non-Project Activities (CNPAs), and the project elements that will be constructed for the benefit of the PCEP will be appropriately segregated for cost purposes. *The Guadalupe Bridge Replacement Project is underway at the south end of Segment 4. The newly installed catenary wire has been temporarily removed to avoid construction conflicts. The project must be completed before the catenary can be re-installed and Segment 4 testing completed. The JPB reports that the project is currently ahead of schedule and should be complete in September 2023.* The installation of additional flip-up seats in EMU bike cars, which is locally funded, will remain open until all cars are delivered.

2.12 Vehicle Technology and Procurement

The JPB placed an order for ninety-six (96) new bi-level EMU vehicles to be produced by Stadler US, Inc. and delivered in six-car trainsets. Separate from the Core Capacity Project, the JPB ordered an additional thirty-seven (37) EMUs in December 2018 using an option in the Stadler contract. The JPB has now ordered an electrified fleet of one hundred thirty-three (133) EMUs configured as nineteen (19) seven-car trainsets. The JPB has remaining options to purchase up to fifty-nine (59) more EMUs at prices based on the date when the option is exercised.

The EMU contract contained an option for Stadler to maintain the vehicles; the JPB did not exercise this option and the vehicles will be maintained by TASI, the JPB's current rail operator. The JPB states that Stadler will provide on-site training and assistance for TASI's personnel for two (2) years following vehicle acceptance.

The EMUs were ordered with two (2) sets of doors, one set at approximately 22" above the top of the rail, and one at approximately 50.5" above the top of the rail. Initially, only the lower set of doors will be activated, and a small step will automatically deploy outside the vehicle to reduce the boarding height to the current platforms. The PCEP's Change Management Board, at its September 2019 meeting, approved the JPB's request for a change order to install temporary panels in place of the high-level doors until the trains operate in blended service with the CHSRA. The high-level doors will be placed in storage until they are installed for blended service with the CHSRA. When the EMUs operate in blended service with the CHSRA vehicles, the high-level doors will be operated to provide level boarding at the higher CHSRA platforms at those stations served by both systems. See additional discussion under Regulatory Issues below.

Stadler has been impacted by the COVID-19 pandemic in a variety of ways and has routinely notified the JPB of these issues.

Stadler reported the following progress on the vehicles:

- An initial trainset is ready for static testing under 25 kV power when it becomes available. This test is expected to take place on the Santa Clara Drill Track (SCDT) adjacent to the CEMOF. This testing is on hold until the issues related to the failed short-circuit tests have been resolved.
- Four (4) trainsets have been delivered to the JPB. *The next two (2) trainsets, TS-6 and TS-9, were scheduled for delivery the last week in March 2023; however, the JPB has asked Stadler to further delay that shipment until testing can be completed on the trainsets that have been*

received. The next delivery may consist of three (3) trainsets instead of two (2) as in the earlier deliveries.

- *The reconditioning of trainset 1 (TS-1) has begun in Stadler's Salt Lake City facility. The reconditioning process will be extensive and is expected to be completed in July 2023. The trainset will go through the same inspections and acceptance tests as the remainder of the fleet before final acceptance by the JPB.*
- Safety and Security certification of the EMUs is nearly complete with only delivery of signed documentation remaining.
- The JPB reports that it has received approximately 75% of the special tools required to maintain the EMUs and approximately 75% of the required spare parts. Delivery of spare parts is being paused to allow the JPB to properly receive and store the incoming materials.
- All 133 car shells have now been shipped from Stadler – Switzerland to Stadler's Salt Lake City assembly plant. Truck frames and bolsters will continue to be produced in Switzerland until the order is complete.
- Stadler reports continuing problems with material availability and supply chain logistics as well as workforce attraction and retention.

2.13 Project Cost

The FFGA budget for the PCEP is $1.931 billion in year of expenditure (YOE) dollars. The JPB adopted a revised budget of $2.44 billion ($2.39 billion for FTA reporting purposes) on December 6, 2021. This new budget reflects a total increase of $462 million from the FFGA budget. The new budget has been incorporated into the JPB's Recovery Plan.

Table 2 below presents the PCEP costs as of January 31, 2023. The JPB re-forecasts the estimated cost at completion (EAC) monthly.

Table 2 – Project Cost Table at 1-31-2023 ($ millions)[1][2]

Description of Work	FFGA Baseline Budget (A)	Current Budget (B)	Cost This Month (C)	Cost To Date (D)	Estimate To Complete (E)	Estimate At Completion (F) = (D) + (E)
10 - GUIDEWAY & TRACK ELEMENTS	**$14,256,739**	**$33,031,357**	**($10,783)**	**$30,776,680**	**$2,254,678**	**$33,031,357**
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	$2,500,000	$2,387,096	($10,783)	$340,735	$2,046,360	$2,387,096
10.07 Guideway: Underground tunnel	$8,110,649	$30,644,262	$0	$30,435,945	$208,317	$30,644,262
10.07 Allocated Contingency	$3,646,090	$0	$0	$0	$0	$0
30 - SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	**$2,265,200**	**$11,046,714**	**$0**	**$9,869,781**	**$1,176,932**	**$11,046,714**
30.03 Heavy Maintenance Facility	$1,344,000	$10,846,714	$0	$9,869,781	$976,932	$10,846,714
30.03 Allocated Contingency	$421,200	$200,000	$0	$0	$200,000	$200,000
30.05 Yard and Yard Track	$500,000	$0	$0	$0	$0	$0
40 - SITEWORK & SPECIAL CONDITIONS	**$255,072,402**	**$439,818,456**	**$11,472,060**	**$420,759,324**	**$20,109,679**	**$440,869,003**
40.01 Demolition, Clearing, Earthwork	$3,077,685	$10,748,067	$10,000	$10,050,914	$697,153	$10,748,067
40.02 Site Utilities, Utility Relocation	$62,192,517	$103,275,822	$3,894,847	$168,035,794	($64,759,972)	$103,275,822
40.02 Allocated Contingency	$25,862,000	$2,370,765	$0	$0	$2,370,765	$2,370,765
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	$2,200,000	$12,042,192	$0	$11,453,082	$589,111	$12,042,192
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks	$32,579,208	$20,541,781	$0	$3,395,270	$17,146,512	$20,541,781
40.05 Site structures including retaining walls, sound walls	$568,188	$0	$0	$0	$0	$0
40.06 Pedestrian / bike access and accommodation, landscaping	$804,933	$2,735,000	$24,800	$1,179,000	$1,556,000	$2,735,000
40.07 Automobile, bus, van accessways including roads, parking lots	$284,094	$0	$0	$0	$0	$0
40.08 Temporary Facilities and other indirect costs during construction	$107,343,777	$266,287,893	$7,542,413	$226,645,265	$41,242,190	$267,887,455
40.08 Allocated Contingency	$20,160,000	$21,816,935	$0	$0	$21,267,921	$21,267,921
50 - SYSTEMS	**$504,445,419**	**$679,851,406**	**$9,912,292**	**$558,300,897**	**$121,550,509**	**$679,851,406**
50.01 Train control and signals	$97,589,149	$112,865,538	$3,721,035	$124,107,400	($11,241,861)	$112,865,538
50.01 Allocated Contingency	$1,651,000	$4,544,979	$0	$0	$4,544,979	$4,544,979
50.02 Traffic signals and crossing protection	$23,879,905	$79,577,607	$1,407,297	$26,893,198	$52,684,410	$79,577,607
50.02 Allocated Contingency	$1,140,000	$397,666	$0	$0	$397,666	$397,666
50.03 Traction power supply: substations	$69,120,009	$127,642,222	$213,392	$120,046,268	$7,595,954	$127,642,222
50.03 Allocated Contingency	$31,755,013	$2,861,411	$0	$0	$2,861,411	$2,861,411
50.04 Traction power distribution: catenary and third rail	$253,683,045	$337,867,089	$4,448,768	$284,672,943	$53,194,146	$337,867,089
50.04 Allocated Contingency	$18,064,000	$5,097,624	$0	$0	$5,097,624	$5,097,624
50.05 Communications	$5,455,000	$5,791,632	$121,800	$2,581,089	$3,222,361	$5,803,450
50.05 Allocated Contingency	$0	$2,905,368	$0	$0	$2,893,550	$2,893,550
50.07 Central Control	$2,090,298	$300,269	$0	$0	$300,269	$300,269
50.07 Allocated Contingency	$18,000	$0	$0	$0	$0	$0
60 - ROW, LAND, EXISTING IMPROVEMENTS	**$35,675,084**	**$33,344,582**	**($2,273)**	**$22,378,026**	**$10,966,556**	**$33,344,582**
60.01 Purchase or lease of real estate	$25,927,074	$33,160,590	($2,273)	$22,244,035	$10,916,556	$33,160,590
60.01 Allocated Contingency	$8,748,010	$0	$0	$0	$0	$0
60.02 Relocation of existing households and businesses	$1,000,000	$183,992	$0	$133,992	$50,000	$183,992
70 - VEHICLES (96)	**$625,544,147**	**$694,462,077**	**$7,463,740**	**$484,257,055**	**$210,205,021**	**$694,462,077**
70.03 Commuter Rail	$589,167,291	$642,359,266	$7,463,740	$470,231,417	$172,127,849	$642,359,266
70.03 Allocated Contingency	$9,472,924	$15,555,307	$0	$0	$15,555,307	$15,555,307
70.06 Non-revenue vehicles	$8,140,000	$17,239,237	$0	$538,280	$16,700,958	$17,239,237
70.06 Allocated Contingency	$0	$379,335	$0	$0	$379,335	$379,335
70.07 Spare parts	$18,763,931	$18,928,931	$0	$13,487,359	$5,441,572	$18,928,931
80 - PROFESSIONAL SERVICES (applies to Cats. 10-50)	**$323,793,010**	**$467,743,916**	**$3,208,180**	**$412,132,511**	**$55,495,405**	**$467,627,916**
80.01 Project Development	$130,350	$289,233	$0	$289,233	$0	$289,233
80.02 Engineering (not applicable to Small Starts)	$180,227,311	$242,422,852	$344,846	$237,069,114	$5,237,738	$242,306,852
80.02 Allocated Contingency	$1,866,000	$0	$0	$0	$0	$0
80.03 Project Management for Design and Construction	$72,029,265	$153,725,729	$2,215,140	$123,641,100	$30,084,629	$153,725,729
80.03 Allocated Contingency	$9,388,080	$0	$0	$0	$0	$0
80.04 Construction Administration & Management	$23,677,949	$50,737,213	$625,383	$39,112,076	$11,625,138	$50,737,213
80.04 Allocated Contingency	$19,537,000	$0	$0	$0	$0	$0
80.05 Professional Liability and other Non-Construction Insurance	$3,500,000	$6,581,851	$0	$4,897,449	$1,684,402	$6,581,851
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	$7,167,275	$10,383,908	$22,812	$7,069,049	$3,314,859	$10,383,908
80.06 Allocated Contingency	$556,000	$650,000	$0	$0	$650,000	$650,000
80.07 Surveys, Testing, Investigation, Inspection	$3,287,824	$210,957	$0	$54,490	$156,467	$210,957
80.08 Start up	$1,797,957	$392,173	$0	$0	$392,173	$392,173
80.08 Allocated Contingency	$628,000	$2,350,000	$0	$0	$2,350,000	$2,350,000
Subtotal (10 - 80)	**$1,761,052,001**	**$2,359,298,507**	**$32,043,217**	**$1,938,474,275**	**$421,758,779**	**$2,360,233,054**
90 - UNALLOCATED CONTINGENCY	**$162,620,295**	**$23,911,952**	**$0**	**$0**	**$22,977,405**	**$22,977,405**
Subtotal (10 - 90)	**$1,923,672,296**	**$2,383,210,459**	**$32,043,217**	**$1,938,474,275**	**$444,736,183**	**$2,383,210,459**
100 - FINANCE CHARGES	**$6,998,638**	**$9,898,638**	**$0**	**$9,304,280**	**$594,358**	**$9,898,638**
Total Project Cost (10 - 100)	**$1,930,670,934**	**$2,393,109,097**	**$32,043,217**	**$1,947,778,556**	**$445,330,541**	**$2,393,109,097**

PMOC Note: The JPB publicly reports expenditures against a total project budget of $1,980,252,533; this translates to the revised budget of $2,442,690,697. This higher amount includes expenditures prior to the project's entry into the Project Development (PD) phase, which is excluded from the FTA's project budget. Costs incurred prior to the project's entry into the PD phase were removed from the estimate at the FTA's request during its review of the FFGA materials. The revised budget for FTA reporting purposes, if accepted by the FTA, will be $2,393,109,097.

Cost Contingency Status

Table 3 summarizes the project contingency as of January 31, 2023, for the revised project budget.

Table 3 – Contingency Status ($ millions) [1]

Contingency Category	Original Baseline Contingency (YOE)	Revised Contingency Budget (YOE)	Current Contingency (YOE)	% of Construction Complete and % Revised Contingency Remaining[3]
Allocated	$152.9	$62,1	*$58,568,558*	*80.05%*
Unallocated	$162.6	$27.9	*$22,977,405*	
TOTAL	**$315.5**	***$90.0***	***$81,545,962***	***90.6%***

[1] Totals may not add due to rounding.
[2] Estimate at Completion
[3] Data as of January 31, 2023.

The PCEP cost contingency balances have been updated based on the $2.44 billion budget. A new cost contingency drawdown curve is being established with new hold-points.

Contingency Management – Electrification

The global settlement with BBII included the establishment of a shared risk pool of $50 million which is considered part of the PCEP contingency. Upon final acceptance of the work, any balance remaining in the pool will be shared equally between BBII and the JPB. The objective of this pool is to reduce the number of change orders and incentivize collaboration between the JPB and BBII. *The pool consists of 27 identified risk items, each with a forecast risk amount, with an aggregate total of $49.95 million, including $12 million in contingency, plus one minor unidentified item valued at $0.054 million.* As changes are identified in the course of the work, they are added to an Issue Resolution Log (IRL), screened against the identified risk items, and negotiated by the parties. The cost of the change, as negotiated, is deducted from the appropriate shared risk item, or if outside the shared risk list, from project contingency. *Table 4 below provides some metrics related to the effectiveness of the IRL through February 13, 2023. The total value of changes approved through the shared risk pool as of February 13, 2023, is $3,450,487.* The IRL metrics are routinely shared with the PCEP's Change Management Board.

Table 4 – Issue Resolution Log Metrics (February 13, 2023)

DESCRIPTION	QTY	%
Total Quantity of IRL Items Opened	300	-
IRL Items Closed without Commercial Implication	90	30.0%
IRL Items Pending Technical Resolution	52	17.3%
Technical Resolution Agreed, Pending Commercial Agreement	33	11.0%
Tech. Resolution & Comm. Implications Agreed (Pending Signature)	6	2.0%
Technical Resolution & Commercial Implications Agreed (< $10k)	9	3.0%
Commercial Implication Pending L3 thru L5 Acceptance	2	0.7%
Total IRL Items Approved	108	36.0%

Project Funding

The JPB approved a new budget of $2.44 billion for the PCEP at its Special Meeting on December 6, 2021. That budget must be supported by additional funding of $462.4 million beyond the original funding plan which applied to the original project cost of $1.930.7 billion. Figure 1 below is the awarded funding as of January 31, 2023. The approved budget is now fully funded.

Figure 1 – PCEP Funding to Support Budget Increase

TYPE	SOURCE	AMOUNT
Federal	ARPA Supplemental CIG	$52.4 million
Federal	Supplemental FFGA CIG	$33 million
Federal	FTA Community Project	$10 million
State	California TIRCP	$367 million
	TOTAL	**$462.4 million**

The following details related to the successful funding strategy shown above.

Additional Federal Funding

The JPB received $52.4 million in Supplemental Capital Investment Grant funds from the 2022 American Rescue Plan Act (ARPA). The JPB recently received an additional $43 million from the Consolidated Appropriations Act of 2023; $33 million in supplemental FTA CIG FFGA funding, and $10 million in Community Project funding.

California State Funding

The FY 2023 State budget has been signed into law. It includes $4.2 billion for high-speed rail and $7.65 billion for transit. $900 million is set aside for existing projects to leverage federal and local fund reserves. The PCEP was awarded $367 million from the State of California's Transit and Intercity Rail Capital Program (TIRCP).

Original PCEP Funding Plan

The PCEP is relying on several sources of funding to complete the project. The Table in the Executive Summary summarizes the JPB's funding plan, as updated through June 23, 2017. The updated funding plan shows total funding of $1,930.7 billion, including $647 million in Section 5309 funds. The plan also includes federal funding from the Section 5307 Urbanized Area Formula program of $287 million. The JPB has drawn down a total of $1,789,005 as of December 31, 2022, or 82% of the combined federal and local funds of $2,133,086. This total includes recently received ARPA funds in the amount of $52.415 million.

The JPB has in place an interim financing agreement for up to $150 million to provide additional cash flow flexibility to address differences in the timing of contractor invoices and the availability of drawdowns from funding sources.

The State of California awarded the JPB a $164.5 million grant in 2018 under its Transportation and Intercity Rail Capital Program (TIRCP). The grant will fund the purchase of additional EMUs using options included in the base contract with Stadler. The grant also includes targeted funding for 8-car platforms, improves wayside bicycle facilities (bike sharing and bike parking), and installs a broadband communications system that expands onboard Wi-Fi and enhances reliability by creating the capability to conduct remote diagnostics and optimize ongoing operations and maintenance.

Change Orders

Electrification Contract Changes: No change order activity during this period. *The following IRL items were approved by the Change Management Board in February 2023:*

- *Incorporation of As-Built Additional Pedestrian Gate Mechanisms - $549,014*
- *ROW Security - $1,050,547*

As of February 13, 2023, a total is $3,450,487 has been drawn from the $50 million Shared Risk Pool established in the Global Settlement.

EMU Contract Changes: *One change order in the amount of $43,520 was issued on January 25, 2023, for Semi-Automatic Phase Break Operation.*

SCADA Contract: No activity this period.

Tunnel Contract Changes: No activity this period.

CEMOF Contract Changes: No activity this period.

PG&E Contract Changes: No activity this period.

2.14 Project Schedule

The FFGA was executed on May 23, 2017, with a Required Completion Date of August 22, 2022. The JPB, for reasons discussed previously, adopted the PMOC's recommended September 26, 2024, as the revised Required Completion Date (RCD) for the project. The JPB did not formally adopt a particular schedule document when it approved the revised PCEP budget of $2.44 billion at its December 6, 2021, meeting; however, the revised budget is based on completing the project by September 26, 2024. The JPB proposed an FFGA RCD of December 31, 2024, in its Recovery Plan submitted September 30, 2022.

Infrastructure Schedule

The JPB and BBII, as noted previously, have agreed to revise BBII's schedule to redefine Milestone 1 to include the completion of all work in Segments 3 and 4. This latest revision does not have any effect on the current substantial completion date or the proposed RCD. *The agreed-upon date for Milestone 1 was April 30, 2022; the current forecast for completion of Milestone 1 is May 28, 2023; an improvement of 42 days from the previous reforecast date.*

BBII is developing a Re-forecast Schedule which will have a data date of January 1, 2023. This schedule is intended to include all activities through final acceptance and be the basis for monitoring through the completion of the contract. The schedule will incorporate the 31 targeted weekend shutdowns that began February 11, 2023, and are designed to improve BBII's productivity. The project's critical path remains the completion of the OCS work as a result of lower than expected OCS productivity.

James Gallegos started work as the PCEP's Scheduling Manager in late November 2022; this brings the scheduling team to four (4) individuals including the Project Controls Manager. The team is providing monthly tracking of BBII's progress and is also continuing to work on integrating the JPB's Rail Activation activities, and the details of BBII's Testing and Commissioning schedule with the existing Integrated Master Schedule (IMS). The current IMS, data date January 1, 2023, includes the BBII, Stadler, and ARINC schedules as well as PCEP dates. This IMS incorporates BBII's updated schedule which combines Segments 3 and 4 into Milestone 1. The JPB has accepted, with comments, BBII's November 2022 progress schedule updates; the December 2022 schedule updates have been received and are under review. The December 2022 schedule update, when accepted by

the JPB, is expected to become the basis for BBII's re-forecast schedule for the remainder of the contract.

EMU Schedule

The PCEP team accepted a re-baselined schedule from Stadler for the completion of the EMU order. Stadler's re-baselined schedule was converted into P6 format and has been incorporated into the IPS. *The JPB is currently forecasting the delivery of the 14th trainset in March 2024 and commencement of the Revenue Service with its new EMUs in September 2024.*

Attachment G - Project Milestones / Key Events shows the currently projected dates for the completion of various significant project activities.

Figure 2 - Summary Project Schedule (2-13-2023)

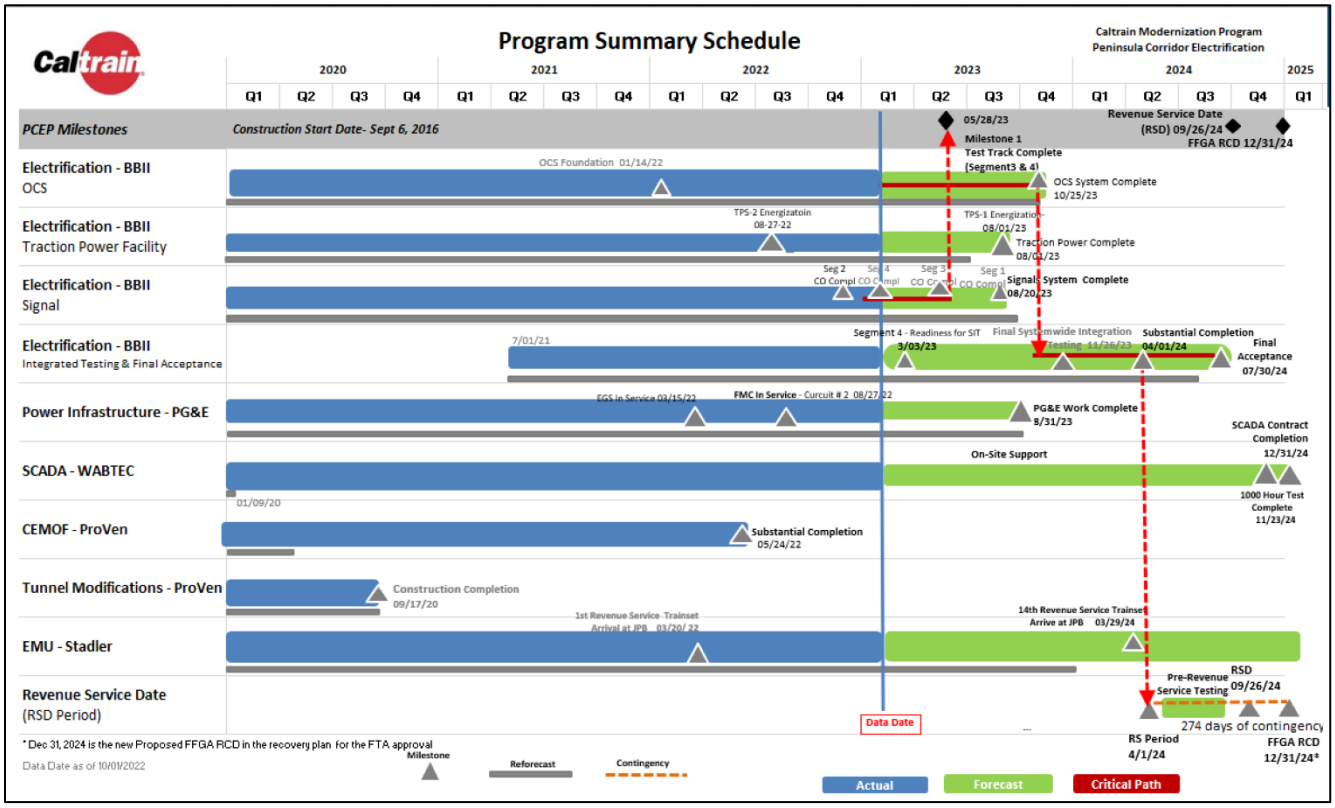
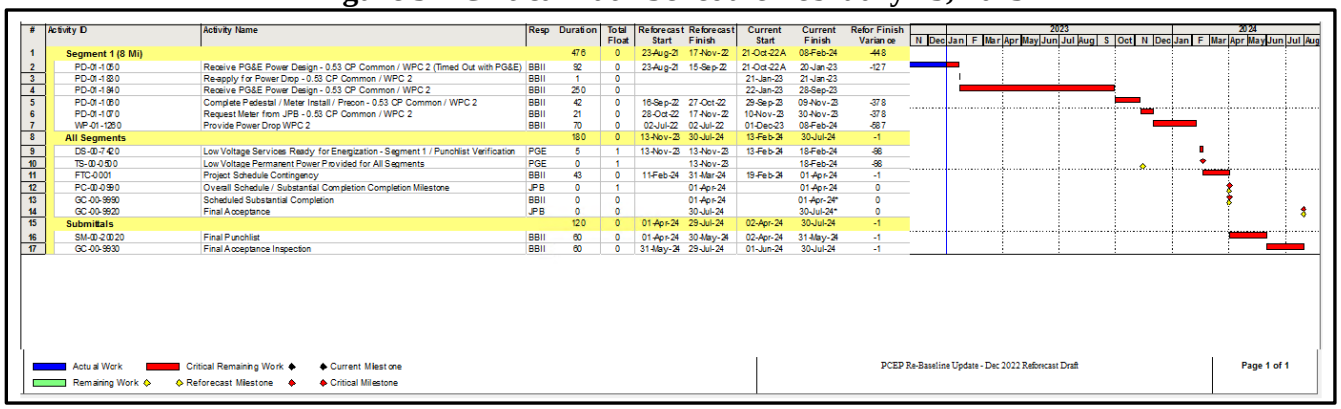


Figure 3 – Critical Path Schedule February 15, 2023



#	Activity ID	Activity Name	Resp	Duration	Total Float	Reforecast Start	Reforecast Finish	Current Start	Current Finish	Refor Finish Variance
1	**Segment 1 (8 Mi)**			476	0	23-Aug-23	17-Nov-22	21-Oct-22A	08-Feb-24	-449
2	PD-01-1050	Receive PG&E Power Design - 0.53 CP Common / WPC 2 (Timed Out with PG&E)	BBII	92	0	23-Aug-23	15-Sep-22	21-Oct-22A	20-Jan-23	-127
3	PD-01-1830	Re-apply for Power Drop - 0.53 CP Common / WPC 2	BBII	1	0			21-Jan-23	21-Jan-23	
4	PD-01-1940	Receive PG&E Power Design - 0.53 CP Common / WPC 2	BBII	250	0			22-Jan-23	28-Sep-23	
5	PD-01-1060	Complete Pedestal / Meter Install / Precon - 0.53 CP Common / WPC 2	BBII	42	0	16-Sep-22	27-Oct-22	29-Sep-23	09-Nov-23	-378
6	PD-01-1070	Request Meter from JPB - 0.53 CP Common / WPC 2	BBII	21	0	28-Oct-22	17-Nov-22	10-Nov-23	30-Nov-23	-378
7	WP-01-1260	Provide Power Drop WPC 2	BBII	70	0	02-Jul-22	02-Jul-22	01-Dec-23	08-Feb-24	-587
8	**All Segments**			180	0	13-Nov-23	30-Jul-24	13-Feb-24	30-Jul-24	-1
9	DS-00-7400	Low Voltage Services Ready for Energization - Segment 1 / Punchlist Verification	PGE	5	1	13-Nov-23	13-Nov-23	13-Feb-24	18-Feb-24	-86
10	TS-00-0500	Low Voltage Permanent Power Provided for All Segments	PGE	0	1		13-Nov-23		18-Feb-24	-86
11	FTC-0001	Project Schedule Contingency	BBII	43	0	11-Feb-24	31-Mar-24	19-Feb-24	01-Apr-24	-1
12	PC-00-0590	Overall Schedule / Substantial Completion Completion Milestone	JPB	0	1		01-Apr-24		01-Apr-24	0
13	GC-00-9990	Scheduled Substantial Completion	BBII	0	0		01-Apr-24		01-Apr-24*	0
14	GC-00-9920	Final Acceptance	JPB	0	0		30-Jul-24		30-Jul-24*	0
15	**Submittals**			120	0	01-Apr-24	29-Jul-24	02-Apr-24	30-Jul-24	-1
16	SM-00-2020	Final Punchlist	BBII	60	0	01-Apr-24	30-May-24	02-Apr-24	31-May-24	-1
17	GC-00-9930	Final Acceptance Inspection	BBII	60	0	31-May-24	29-Jul-24	01-Jun-24	30-Jul-24	-1

Recent Significant Schedule Changes

The following are examples of the significant schedule changes mentioned in the JPB's February 2023 Change Management Board update.

BBII - Electrification

The significant schedule slippage that appeared in January 2023 has been recovered through the combined efforts of BBII and the PCEP team.

- *Milestone #1 completion of combined Segments 3 and 4 is now forecast for May 28, 2023, a substantial improvement from last month's July 9, 2023 forecast.*
- *BBII Substantial Completion is now April 1, 2024.*
- *BBII Final Acceptance is now July 30, 2024.*

Critical Path

The PCEP is a core capacity project. The core capacity completion objective will be satisfied when the JPB operates a total of fourteen (14) seven-car trainsets in electrified service. *The JPB describes the BBII's critical path as follows:*

> *"The current critical path for PCEP starts with BBII waiting past the required period on PG&E for the power drop designs in Segment 1. After reapplying to PG&E for additional designs, the critical path schedule shows BBII waiting another 250 days to receive these designs before preparing for the installation of the meter and for the permanent power drop in Segment 1. The critical path then continues with the completion of the permanent low voltage power to all the segments, Project Schedule Contingency, Substantial Completion, and Final Acceptance." Source: PCEP January 2023 Monthly Progress Report*

The late installation of the permanent low-voltage power drops will not prevent the JPB from placing the line in revenue service because temporary power can be provided by generators, as is currently the case in multiple locations. The PCEP team is meeting regularly with PG&E in an effort to improve PG&E's design and installation schedule; this work can only be performed by PG&E or its own contractors.

Timely completion of the OCS continues to be the major challenge facing BBII. BBII has been unable to achieve its productivity objectives despite having mobilized additional management personnel, added work crews, and brought equipment from the UK to mitigate this problem. The plan that includes 31 targeted weekend rail service shutdowns was initiated on February 11, 2023, but thus far the productivity goals have not been met.

Schedule Contingency Status

The JPB's latest schedule taken from the February 15, 2023, Change Management Board (CMB) meeting presentation projects a Revenue Service Date (RSD) of September 26, 2024, and provides 274 days of schedule contingency calculated from BBII's current forecast Substantial Completion Date of April 1, 2024, to the JPB's proposed FFGA RCD of December 31, 2024. The JPB's global settlement with BBII includes incentives for early completion of signal cutovers, early substantial completion, and early achievement of revenue service. The schedule incentives are shown in Table 5 below. *Note: The Revenue Service Date (RSD) is the date on which the JPB is able to operate 14 electrified trains in regular passenger service. Substantial Completion of BBII's Electrification contract will occur when BBII has complied with the requirements for Overall Substantial Completion as defined in General Provision (GP) 25.1.1 of its contract. The following text is an excerpt from GP 25.1.1.*

> *"GP25.1.1 Substantial Completion*
> *The Contractor shall plan, organize, schedule and execute Substantial Completion of its Work as follows: a. Overall Substantial Completion: In order for the JPB to commence operation of the EMUs for pre-revenue service, Electrification systems, inclusive of all signaling and communications systems within the scope of Work, over the full length of the corridor must be installed, energized, safety certified, final calibrated and adjusted, integrated with existing systems, tested and commissioned by the Contractor. This includes completion and placement into service of all rail signal modifications in each of the four Work Segments. After the Contractor's Overall Substantial Completion, the JPB will then commence Full Final Integrated Testing and Pre-Revenue service."*

Table 5 – BBII Schedule Performance Incentives

Objective	Date of Completion	Amount
Achieve Electrified Revenue Service prior to the Final Acceptance Date of July 31, 2024	On or before 4/30/2024 Between 5/1 and 5/31/2024 Between 6/1 and 6/30/2024	$3,000,000 $2,000,000 $1,000,000
Achieve Overall Substantial Completion prior to April 30, 2024	On or before 3/31/2024 After 2/29 and before 3/31/2024 After 1/31 and before 2/29/2024 On or before 1/31/2024	$4,100,000 $30,000/day $40,000/day $50,000/day **Max $8,000,000**
Completion of all 2SC Cutovers in Segment 2	On or before 11/10/2022	$2,000,000
Completion of 2SC cutovers in all 4 Segments	On or before 9/30/2023	$2,000,000
Maximum Schedule Incentives Available		**$15,000,000**

Revenue Service Date

The JPB is currently forecasting the commencement of revenue service with 14 new EMUs on September 26, 2024. *Stadler expects to ship the 14th trainset in March 2024.*

- **PMOC Observations:**
  - *BBII has been unable to meet its obligation to timely submit monthly schedule updates and produce acceptable re-forecast schedules. The lack of an up-to-date contractor's schedule that reflects the expected path to completion makes effective planning of the work very difficult for the PCEP team.*
  - The PMOC continues to encourage the JPB to employ proven schedule management practices including enforcing timely receipt of required updates, prompt review and resolution of contractor schedule issues, regular identification

of the controlling operation(s), and the timely development of workarounds and Plan Bs to avoid unpleasant surprises.

- The PMOC encourages the PCEP team to complete the integration of the remaining schedules as promptly as possible.
- The lack of a complete and fully integrated master project schedule makes running a formal Monte Carlo schedule risk analysis very difficult. This creates additional uncertainty in terms of the project completion date as well as the potential for additional contractor claims for time related overhead.

2.15 Project Risk

The PCEP has been implementing its RIMP (Risk Identification and Mitigation Plan) since its development in 2014. The PCEP's Risk Management Lead conducts weekly updates of a sub-set of the Risk Register and the project's Risk Management Committee generally meets monthly to review those risks proposed for retirement, risks with a major change in severity, and proposed additions to the Risk Register. The Top Risks, with risk numbers, are shown in Attachment D. **PMOC Note:** Risks graded 1~~2~~0 or higher are now considered Top Risks. Prior to the recent regrading of the Risk Register, risks graded 18 or higher were considered Top Risks.

The JPB/PCEP leadership team conducted several risk workshops with BBII during the course of negotiating the global settlement. An internal PCEP risk refresh was conducted on September 28, 2021; the quantitative results of that effort have not been released. The ICO also initiated an external peer review of project risk that was conducted on October 26-27, 2021. The PMOC participated in both events. The JPB's most recent internal Risk Refresh Workshop was held on April 1, 2020.

FTA Risk Refresh

The PMOC conducted an FTA-led virtual Risk Refresh workshop on December 8, 10, 15, and 17, 2020. The objective of the Risk Refresh was to confirm the likelihood of the project completing within budget and in accordance with the FFGA schedule. As noted elsewhere in this report, the JPB accepted the PMOC's recommendations for a revised project budget and a new Recommended Completion Date for the project. The FTA, as a consequence of the results from the Risk Refresh and the project's history of schedule delays and cost overruns, has designated the PCEP as an "At Risk" project. The FTA requested that the JPB prepare and submit a Recovery Plan for the PCEP by October 8, 2021. The JPB retained a new executive to lead the PCEP and conducted a comprehensive review of the project, including a risk refresh. The JPB requested additional time to prepare the Recovery Plan and the FTA agreed to defer receipt of the Recovery Plan. The JPB delivered its final Recovery Plan to the FTA on September 30, 2022.

Current Risk Activities

The PCEP's Risk lead re-ran the Monte Carlo Cost Risk model in January 2023 in keeping with the quarterly schedule established with the CMB members. Monte Carlo analysis was conducted on the 69 risks appearing on the January 6, 2023, risk register. Cost of risk, to a probability of 65% (P65) is $30.5 million, a 25% increase from the $24.4 million calculated in October of 2023.

A formal schedule analysis was not performed. However, the April 2020 analysis, the last comprehensive schedule analysis, was conducted to an 85 percent (P85) probability on the +20 risks with a probability of more than 50 percent and more than three (3) months of potential delay (i.e., most likely to affect the project completion date). *Currently, only six (6) risks meet those criteria, suggesting ~~a~~ less potential impact on the schedule.*

The forecast remaining cost contingency on February 1, 2023, was approximately $81.5 million; the drawdown continues at a modest pace.

- **PMOC Observation:** *The PMOC was pleased with the results of the January 2023 Monte Carlo cost risk analysis despite the $6.1 million increase in the direct cost of risk.*
- The PMOC continues to suggest that the JPB conduct a fresh risk elicitation exercise because of the significant turnover in the PCEP management team. The new members of the team may recognize risks not identified previously, particularly those related to testing and commissioning, and rail activation.
- The PMOC notes that a major component of the Global Settlement with BBII was the cost of time related overhead (TRO). The JPB has been unable to accurately assess the risk of TRO because it lacks a fully integrated master project schedule. The PMOC strongly encourages the PCEP team to complete the integration of its MPS so that it can run the Monte Carlo schedule risk analysis at the earliest possible time. *The PCEP's Risk lead continues planning for a Monte Carlo schedule risk analysis as soon as a fully integrated project schedule is available.*

2.16 Quality Assurance / Quality Control (QA/QC)

The following specific quality management activities were reported for the PCEP:

Infrastructure Projects

- *The focus remains on quality as a major element of the readiness of Segment 4 for electrified operations. The failure of BBII's recent short-circuit re-test in Segment 4 is extremely troubling because of the thorough reviews performed by BBII after the initial test failure.* The JPB has requested that BBII perform an audit of its TPS to verify that work has been properly completed and verified. The JPB continues to conduct punch-list inspections of the various constructed works in Segments 4 and 3.
- *The JPB's quality team is monitoring the quality activities being performed by BBII and its subcontractors and suppliers and is assisting in the process of root cause analysis. Closure of NCR 105 which is related to the short-circuit test failure remains a high priority; this must be closed out before the short-circuit re-test.*
- Continued review of BBII, ProVen, and ARINC (now Wabtec) non-domestic Material Receiving Reports (MRRs) for Buy America compliance including review of the justification and reasoning for purchase of non-domestic items. *The JPB reports that BBII has promised to produce the indented bill of materials for the non-rolling stock systems equipment in February 2022. The indented bill of materials is a necessary element of the Buy America calculations for such equipment.*

EMU Quality

- *A first article inspection of the third replacement supplier for molded panels is scheduled for March 2023.*
- There has been improvement in the preparation of work directives for assembly work in Salt Lake City. Clear work directives are particularly important due to the high turnover of personnel.
    - **PMOC Observations and Recommendations:** The PMOC supports the increased emphasis on Systems Integration, Testing and Commissioning, and quality management. Timely completion of the necessary documentation continues to be a challenge.

- The PMOC is continuing to observe the role of the PCEP's quality management team during start-up and testing. The PCEP's leadership supports the quality program and its role in testing and start-up and has increased resources for this work. A field quality auditor was recently added to the PCEP team.

2.17 Safety and Security

The JPB contracts for safety and security consulting services to support the PCEP. The PCEP safety team also provides support as needed to the JPB and its Director of Safety/Security. The project safety professionals from the JPB, PCEP, TASI, and BBII are collaborating in joint visits to the project work sites to demonstrate to the workers that the leadership of these organizations take their safety seriously.

There were no reportable injuries in December 2022, January, and February 2023. The reportable injury rate (RIR) for 2022 was 2.82 which is higher than the national average of 2.50. *Overall, the RIR from inception through January 2023 is 1.87.*

The JPB's acting Executive Director announced in August 2022 that the agency has commissioned an independent review of its safety culture; a draft report has been received and is under review.

BBII reported a significant increase in the theft of copper cables used for track bonding, including cables already installed. The incidence of thefts appeared to increase in proximity to homeless encampments near the ROW. The JPB made contact with some of the homeless individuals and offered inducements, such as sleeping bags, if the thefts stopped. Thus far this experiment has been successful.

The National Transportation Safety Board (NTSB) continues its investigation of the serious accident that occurred on the railroad on March 10, 2022. The NTSB's report on the incident is expected in the near future.

The PCEP safety team continues to monitor the safety performance of the various contractors and subcontractors working on the project, including their compliance with Site Specific Work Plans.

The safety team continues to provide training in electrical hazard awareness for the PCEP team and contractors, and through the Fire and Life Safety Committee (FLSC), for first responders in Segments 3 and 4 in anticipation of the upcoming electrification of the OCS system in Segment 4. Information has been shared with the public outreach team who will provide appropriate messaging to the general public in advance of the electrification of the various sections of the project. Recent safety related activities include:

- *Continue working through the remaining safety and security certification items for both infrastructure and EMU elements.*
- *The PCEP Safety Team will provide OCS Safety Awareness training to the California Public Utilities Commission (CPUC) in Fresno, CA on April 4, 2023.*
- Continued safety special task force working group including TASI, Rail Operations, and PCEP to address communications, process, and procedure improvements.
- OCS Awareness Training continues for first responders in Segment 3.

2.18 Americans with Disabilities Act (ADA)

Early in the development of the project, the PMOC raised a question regarding the need for the PCEP to demonstrate Equivalent Facilitation under the Americans with Disabilities Act (ADA) with respect to either the new EMU vehicles or the infrastructure. A conference call was held on November 6, 2015, between members of the PCEP team, FTA Region IX staff, the PMOC, and the FTA's Office of Civil Rights to discuss the issue. The representative of the Office of Civil Rights stated that based

on information presented by PCEP's representatives, the project will not need to demonstrate Equivalent Facilitation because the current access to the vehicles will remain unchanged. This complies with the requirements of the ADA.

The new EMU vehicles will be equipped with powered onboard lifts to aid passengers using mobility devices. The JPB requested the FTA's concurrence to reduce the number of onboard lifts from 32 per train set to 16 per train set and to phase the installation of the lifts. The JPB's proposal calls for the initial installation of two (2) lifts per train set, one (1) each in the northernmost car and one (1) in the following car, which will be equipped with an accessible restroom. The remaining four (4) lifts per train set are to be installed prior to the start of blended service with the CHSRA trains. The FTA, following its review of the JPB's proposal and further clarification provided by a conference call, concurred with the JPB's proposed reduction in the total number of passenger lifts per train set. The phased installation of the lifts was also discussed and associated grant timing considerations. Caltrain's Rail Operations Department recently requested the interim removal of the two (2) onboard lifts until the EMUs operate in blended service with the CHSRA trains. The justification for this request is that the space occupied by the onboard lifts will interfere with the movement of passengers using the stairs where the lifts are installed. Further, the accommodation of passengers using mobility devices and wishing to use the restroom can be accomplished by de-boarding the passenger and repositioning the train at any station, a procedure currently in use. The change was approved by the Change Management Board at its September 2019 meeting.

The new EMU vehicles must comply with the FTA's current ADA requirements and the guidance in FTA Circular 4710.1.

The FRA conducted an on-site design review of EMU TS1 at Stadler's assembly facility in Salt Lake City, Utah in July 2020. During the review, the FRA expressed concerns related to possible interference between stored bicycles, passengers seated in the bike cars, and access to the emergency egress points in the bike cars. Stadler completed the design of the barrier, a Change Order was executed for the installation of the barriers, and the barriers are being installed on all trainsets. The FRA observed the new configuration of the bike cars during its Sample Car Inspection on February 16, 2022, and expressed no concerns or objections to the arrangement.

The JPB conducted a test on October 13, 2022, of the portable ADA ramp carried onboard each EMU trainset to facilitate the boarding of a passenger using a mobility device. The ramp exceeds current ADA load requirements and satisfies the test requirements.

2.19 Buy America

The PMOC continues to review the JPB's compliance with Buy America requirements related to manufactured products and rolling-stock systems. The JPB has provided documentation related to the compliance of its three (3) major contractors, and that material has been reviewed by the PMOC's Buy America experts. The JPB continues to await additional information from BBII needed to demonstrate the appropriate classification of elements of the traction power and train control systems.

The JPB's vehicle consultant conducted a Post-Delivery Buy America audit on June 28 and 29, 2022, and produced its audit report on July 11, 2022. The auditors found that the Stadler EMUs contain an average of 74.3% domestic content per seven-car trainset, which is more than the required 60% for this contract. The PMOC recommends that the JPB continue to monitor Stadler's Buy America performance through the completion of the order.

2.20 Start-Up, Commissioning, Testing

The JPB and PCEP team have several activities focused on the start-up and testing of both the infrastructure elements of the project as well as the EMU vehicles. Each of the three (3) primary

contractors is responsible for developing and conducting test and commissioning plans for its work elements. The PCEP team is responsible for the integration of the major elements and the overall start-up of electrified rail operations. *The PCEP's Director of Systems Integration and Testing holds weekly meetings with representatives of each of the discipline or technical leads from the various organizations.*

Electrification Contract (OCS, Traction Power, Signals and Communications)

- BBII is moving ahead with the work needed to complete the electrification of Segment 4 so that EMU testing can begin. This work includes preparation and completion of test plans and testing activities, certification of test results, completion of all related documentation, and training of contractor staff. *BBII is targeting May 19 and 20, 2023 for the next short-circuit re-test, pending the successful completion of all required predecessor activities. Live wire testing of an EMU in Segment 4 will follow the successful completion of the short-circuit re-test.*
- *BBII's leadership continues to search for ways to improve the productivity of its OCS crews while also attending to the issues that resulted in the failed short-circuit tests.*
- BBII continues to participate in the project-wide Systems Integration, Safety and Security Certification Committee, Testing and Commissioning, and Rail Activation meetings.

EMU Contract

- *Employees from Caltrain, Hatch, TASI, and Stadler visited Switzerland at the end of January for a trip centered on the future maintenance of the fleet. The team visited several Swiss Federal Railway and Stadler sites to gather information on how they service and overhaul their KISS fleets. This visit gave the team a good starting point to begin planning these future tasks for the new Caltrain fleet.*
- The JPB now has four (4) trainsets on site awaiting dynamic testing following the successful testing and completion of the TPS and OCS in Segment 4 and the Santa Clara Drill Track (SCDT). Initial tests will be run on the SCDT before the EMUs are run on the Segment 4 main tracks. Clearance tests of the entire alignment have been successfully completed using an unpowered EMU propelled by a diesel locomotive. *Electrified testing of the EMUs with 25 kV power is now expected to occur in ~~late May~~early June of 2023.*
- Stadler is participating in the project-wide Systems Integration and Safety and Security Certification Committee meetings.
- Stadler is also conducting training of maintenance and operations personnel on the EMUs.

SCADA Contract

- Wabtec (formerly ARINC) recently received a Change Order to extend support for the SCADA system in accordance with the current completion schedule.

Readiness for Electrified Rail Operations

PCEP's Rail Activation Committee (RAC) meets regularly on a weekly basis. The RAC includes representatives from the PCEP's technical consultants and the JPB's Rail Operations group. The Rail Activation lead recently led a go/no go review of preparations for the electrified sectionalization tests scheduled for October 21-23, 2022. The tests were successfully completed but took somewhat longer than originally expected. The follow-on short-circuit test was not successful and must be re-run after corrections have been made. *The chair of the RAC reports that he is re-writing the Rail*

Activation Plan and will be incorporating the elements needed for the agency to be prepared to assume electrified rail operations. The Draft re-write is expected to be completed in March 2023.

The Rail Activation Schedule developed by the RAC has now been integrated with the other project schedules such as Testing and Commissioning, Systems Integration, Electrification, EMU, and SCADA to provide a truly integrated project schedule.

- **PMOC Observations:** The PMOC is conducting a modified Readiness for Service Review related to the initial electrification of Segment 4 and testing of the EMUs. This work is being performed under a programmatic Task Order.
- The PMOC continues to monitor the activities of the RAC as well as the other project activities related to start-up and testing and safety certification. The PMOC continues to encourage all parties to communicate openly to avoid confusion. The PMOC observes that overall coordination between the JPB and BBII is improving under the PCEP's new leadership and through the renewed vigorous partnering effort.
- Unexpected issues continue to arise as the contractors and the PCEP team begin the testing and commissioning process for Segment 4. Completion of the integrated master schedule should provide the PCEP team with an effective tool to manage both planned and unplanned events.

2.21 Before-and-After Study Reporting

The PMOC verified that the JPB had prepared a Before and After (B&A) Study Plan during its evaluation of the PCEP's readiness to receive an FFGA. The B&A Plan was reviewed by FTA headquarters staff as part of the FFGA preparation process. The PMOC verified that the JPB has archived Before and After Documentation as of the Entry into Engineering (August 12, 2016). The materials were assembled according to the specifications in Appendix A of the Plan for the Before-and-After Study. The PMOC is in the process of verifying that the JPB has archived the required materials for Milestone 2, FFGA award. The PMOC will also follow-up with the JPB to encourage early planning to address the After requirements of the plan.

2.22 Lessons Learned

The PMOC routinely encourages the PCEP team to identify and document lessons learned during the course of the PCEP. The PMOC discovered, during a routine review using ACONEX, the project's document control system, that a Draft Lessons Learned Log and two (2) examples of elaborated lessons learned had already been produced. Further inquiry produced the following information.

The PCEP Risk Manager conducted a series of interviews (not for attribution) with members of the PCEP team in 2018, with the objective of developing a list of Lessons Learned. The interviews produced a log of 35 issues which was distilled into two (2) for elaboration as an example of how the material could be further developed. The two topics that were further developed were Contractor Construction Work Windows and Land Acquisition Lesson Learned.

The Lessons Learned materials described above were reproduced as an attachment to the PMOC's Final Monitoring Report under Task Order 005; the report was submitted in June 2020.

The PCEP team, with encouragement from the PMOC, has undertaken a second round of lessons learned interviews. The interviews are complete and the material has been compiled in the form of a summary table which was shared with the PMOC at QPRM #17 in July 2021. The JPB's Risk Manager reports there is currently no plan to elaborate on the various Lessons.

The PCEP's Director of Signal and Transmission Power reports that the signal team is keeping lessons learned for each signal cutover. Although many are site specific, it is likely that valuable trends will become apparent upon a comprehensive review.

Attachment A List of Acronyms

Acronyms	List of Terms
2SC	Two Speed Check Grade Crossing Approach Warning System
AAR	Association of American Railroads
ADA	Americans with Disabilities Act
AFTAC	Audio Frequency Train Activated Circuit
APTA	American Public Transportation Association
ARINC	Aeronautical Radio, Incorporated
ATF	Autotransformer Feeder
ATP	Alternate Technical Proposal
BAAQMD	Bay Area Air Quality Management District
BAFO	Best and Final Offer
BART	Bay Area Rapid Transit District
BBII	Balfour-Beatty Infrastructure, Inc.
BCCF	Back-up Central Control Facility
BGSP	Broadway Grade Separation Project
Cal ISO	California Independent System Operator (Electrical)
Cal/OSHA	California Office of Occupational Safety and Health
Caltrans	California Department of Transportation
CAR	Corrective Action Request
CBOSS	Communications Based Overlay Signal System
CC	FTA's Core Capacity Improvement Program
CCB	Change Control Board
CCF	Central Control Facility
CCIP	Contractor Controlled Insurance Program
CCSF	City and County of San Francisco
CDR	Construction Discrepancy Report
CDRL	Contract Data Requirements List
CEL	Certified Elements List
CEMOF	Central Equipment Maintenance and Operations Facility
CEQA	California Environmental Quality Act
CGA	Construction Grant Agreement
CHSRA	California High-Speed Rail Authority
CIG	FTA's Capital Investment Grant Process
CIL	Certifiable Items List
CMB	Change Management Board
CM/GC	Construction Manager/General Contractor
CNPA	Concurrent Non-Project Activity
CO	Change Order
CO	Chief Officer (CalMod)
CP	Control Point
CPUC	California Public Utilities Commission
CSCG	City/County Staff Coordinating Group
CWT	Constant Warning Time
D-B	Design-Build
DBB	Design-Bid-Build
DBE	Disadvantaged Business Enterprise
DEIR	Draft Environmental Impact Report
DQP	Design Quality Plan
DRB	Disputes Review Board
DSC	Differing Site Condition
DSDC	Design Support During Construction
DVR	Design Variance Request

Acronyms	List of Terms
EA	Environmental Assessment
EAC	Estimate at Completion
EE	Entry into Engineering
EIR	Environmental Impact Report
EIS	Environmental Impact Study
EMI	Electromagnetic Interference
EMU	Electric Multiple Unit Rail Vehicle
ESZ	Electrical Safety Zone
ETB	Electrified Trolley Buses
ETC	Estimate to Complete
FAI	First Article Inspection
FAT	Factory Acceptance Test
FD	Final Design
FEIR	Final Environmental Impact Report
FERC	Federal Energy Regulatory Commission
FFGA	Full Funding Grant Agreement
FLSC	Fire Life Safety Committee
FMOC	Financial Management Oversight Consultant
FMP	Fleet Management Plan
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FWO	First Written Offer
FY	Fiscal Year
GO	General Order (issued by the CPUC)
HSR	High-Speed Rail
HVAC	Heating, Ventilation, and Air Conditioning
ICE	Independent Cost Estimate
ICO	Interim Chief Officer
I-ETMS	Interoperable Electronic Train Management System
IFB	Invitation for Bids
IFC	Issued for Construction
IGA	Inter-Governmental Agreement
IJ	Insulated Joints
IMS	Integrated Master Schedule
ITCS	Incremental Train Control System
IRL	Issue Resolution Log
JPB or PCJPB	Peninsula Corridor Joint Powers Board
Jacobs	Jacobs Project Management Company
KKCS	Kal Krishnan Consulting Services, Inc.
LF	Linear Feet
LNTP	Limited Notice to Proceed
LONP	Letter of No Prejudice
LPMG	Local Policy Makers Group
MCC	Management Capacity and Capability
MRR	Material Receiving Report
MOU	Memorandum of Understanding
MPS	Master Project Schedule
MRS	Modern Railway Systems
MTC	Metropolitan Transportation Commission
NCR	Non-conformance Report
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NTO	Notice to Owner (for Utility Relocation)

Acronyms	List of Terms
NTP	Notice to Proceed
NTSB	National Transportation Safety Board
OCS	Overhead Contact System/Overhead Catenary System
PAP	Palo Alto Power
PCEP	Peninsula Corridor Electrification Program
PCWG	Peninsula Corridor Working Group
PD	Project Development Phase
PG&E	Pacific Gas and Electric
PHA	Preliminary Hazard Assessment
PMOC	Project Management Oversight Contractor
PMP	Project Management Plan
PPE	Personal Protective Equipment
ProVen	ProVen Management, Inc.
PS	Paralleling Station for Traction Power Supply
PTC	Positive Train Control
PTCSP	Positive Train Control Safety Plan (FRA)
PTG	Parsons Transportation Group
QA	Quality Assurance
QAP	Quality Assurance Plan
QC	Quality Control
QMP	Quality Management Plan
QPRM	Quarterly Progress Review Meeting
RAC	Rail Activation Committee
RAMP	Real Estate Acquisition and Management Plan
RAP	Rail Activation Plan
RAS	Rail Activation Schedule
RCD	FFGA Required Completion Date
RE	Resident Engineer
RFA	Request for Amendment
RFI	Request for Information
RFMP	Rail Fleet Management Plan
RFP	Request for Proposal
RIMP	Risk Identification and Mitigation Plan
RIR	*Recordable Incident Rate (Safety)*
RON	Resolution of Necessity (for Eminent Domain purposes)
ROCS	Rail Operations Center System
ROW	Right of Way
RSD	Revenue Service Date or Revenue Service Demonstration
RWIC	Roadway Worker in Charge
RWP	Roadway Worker Protection
RWQCB	Regional Water Quality Control Board
SamTrans	San Mateo County Transit District
SAR	Secure Authentication Resolution
SAV	Secure Authentication Version
SCADA	Supervisory Control and Data Acquisition
SCC	Standard Cost Category
SCDT	Santa Clara Drill Track
SCVTA/VTA	Santa Clara Valley Transportation Authority
SCVWD	Santa Clara Valley Water District
SF	City of San Francisco
SFCTA	San Francisco County Transportation Authority
SFMTA	San Francisco Municipal Transportation Agency
SHPO	State Historic Preservation Office
SJ	City of San Jose

Acronyms	List of Terms
SLC	Salt Lake City
SMCTA	San Mateo County Transportation Authority
SME	Subject Matter Expert
SOGR	State of Good Repair
SONO	Statement of No Objection
SOO	Statement of Objection
SP	Southern Pacific Transportation Company
SSCP	Safety and Security Certification Plan
SSI	Sensitive Security Information
SSMP	Safety and Security Management Plan
SSOA	State Safety Oversight Agency
SSWP	Site Specific Work Plan
SVP	Silicon Valley Power
TAD	Track Access Delay
TASI	Transit America Services, Inc.
TEAM	Transportation Electronic Award Management System
TIA	Time Impact Analysis
TIRCP	Transportation and Intercity Rail Capital Program
TJPA	Transbay Joint Powers Authority
TLOA	Transmission Load Operating Agreement
TPF	Traction Power Facility
TPS	Traction Power System
TPSS	Traction Power Substation
TrAMS	Transportation Award Management System
TRO	Time Related Overhead
TTCI	Transportation Technology Center, Inc.
TVA	Threat and Vulnerability Analysis
TVM	Transit Vehicle Manufacturer
UPRR	Union Pacific Railroad
UK	United Kingdom
USDOT	U. S. Department of Transportation
USFWS	United States Fish and Wildlife Service
VE	Value Engineering
VECP	Value Engineering Change Proposal
VTA	Santa Clara Valley Transportation Authority
WPC	Wayside Power Cubicle
YOE	Year of Expenditure

Attachment B Safety and Security Checklist

Safety and Security Checklist			
Project Overview			
Project Mode	Commuter Rail		
Project Phase	FFGA – Construction		
Project Delivery Methods	Design-Build, Design-Bid-Build		
Project Plans	**Version**	**Review by FTA**	**Status**
Safety and Security Management Plan (SSMP)	Rev 7	Y	Rev. 6 reviewed June 2020; Rev 7 was approved by PCEP on 6/11/2021 and provided to the PMOC for review.
Safety and Security Certification Plan (SSCP)	Rev 0	N	Under Review
System Safety Program Plan (SSPP)	Rev 7	N	Under Review
System Security Plan or Security and Emergency Preparedness Plan (SEPP)	Rev 0	N	SSP was audited by CPUC in March 2021 with no findings
Construction Safety and Security Plan (CSSP)	V3 Part C of SPs		In Contract Documents

Safety and Security Checklist		
Area of Focus	**Y/N**	**Notes/Status**
Safety and Security Authority		
Is the project sponsor subject to 49 CFR Part 659 state safety oversight requirements?	Y	
Has the state designated an oversight agency as per 49 CFR Part 659.9?	Y	California Public Utilities Commission is SSOA; the FTA certified California's SSOA program on October 23, 2018.
Has the oversight agency reviewed and approved the project sponsor's Security Plan or SSPP as per 49 CFR Part 659.17?	Y	CPUC audited the System Security Plan during March 2021; there were no findings.
Did the oversight agency participate in the last Quarterly Review Meeting?	Y	QPRM No. 22 was held December 5, 2022
Has the project sponsor submitted its safety certification plan to the oversight agency?	Y	SSCP submitted Rev. 0 which is currently under review.

Safety and Security Checklist		
Area of Focus	**Y/N**	**Notes/Status**
Has the project sponsor implemented security directives issued by the Department of Homeland Security and/or Transportation Security Administration?	Y	No directives have been received at this time. Caltrain's Safety and Security Department is the direct contact for DHS. The JPB's Information Technology network administrators receive periodic updates on cyber-security risks from the Cybersecurity & Infrastructure Security Agency (CISA) and implement appropriate actions to respond to those risks.
SSMP Monitoring		
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this	Y	Rev 7 was approved by PCEP on 6/11/2021 and provided to the PMOC for review.
Does the project sponsor review the SSMP and related project plans to determine if updates are necessary?	Y	
Does the project sponsor implement a process through which the Designated Function (DF) for Safety and DF for Security are integrated into the overall project management team? Please specify.	Y	In the SSMP and Section 11.0 of the PMP.
Does the project sponsor maintain a regularly scheduled report on the status of safety and security activities?	Y	Safety & Security activities are reported in the monthly PCEP report.
Has the project sponsor established staffing requirements, procedures and authority for safety and security activities throughout all project phases?	Y	Section 3.0 of SSMP
Does the project sponsor update the safety and security responsibility matrix/organizational chart as necessary?	Y	
Has the project sponsor allocated sufficient resources to oversee or carry out safety and security activities?	Y	
Has the project sponsor developed hazard and vulnerability analysis techniques, including specific types of analysis to be performed during different project phases?	Y	Updated PHA (3/28/22) and TVA (6/28/21) have been prepared and are under review.
Does the project sponsor implement regularly scheduled meetings to track to resolution any identified hazards and/or vulnerabilities?	Y	Yes, in Safety and Certification Committee meetings which started in December 2016 on a project level and through our "Capital Safety Committee" which meets quarterly. In addition, meetings are conducted with the contractor monthly to review project incidents, lessons learned, hazards, vulnerabilities, and mitigations. IndustrySafe is also being used to track safety activities.
Does the project sponsor monitor the progress of safety and security activities throughout all project phases? Please describe briefly.	Y	Yes, through the Safety & Security Certification Committee and the Fire/Life Safety Committee which are ongoing committees throughout the life of the project.

Safety and Security Checklist		
Area of Focus	**Y/N**	**Notes/Status**
Does the project sponsor ensure the conduct of preliminary hazard and vulnerability analyses? Please specify the analyses conducted.	Y	Updated PHA and TVA documents were submitted by the D-B contractor and are under review. The OHA (1/14/22) focused on Milestone 1 is under review.
Has the project sponsor ensured the development of safety design criteria?	Y	
Has the project sponsor ensured the development of security design criteria?	Y	
Has the project sponsor ensured conformance with safety and security requirements in design?	Y	Design Criteria checklists have been developed and reviewed by the Safety & Security Certification Review Committee.
Has the project sponsor verified construction specifications conformance?	Y	All facets of the Electrification construction are underway, OCS, TPS, Signals, and Communication.
Has the project sponsor identified safety and security critical tests to be performed prior to passenger operations?	Y	Addressed in SSMP as required by D/B Contractor during construction.
Has the project sponsor verified conformance with safety and security requirements during the testing, inspection, and start-up phases?	Y	Addressed in SSMP and SSCP.
Has the project sponsor evaluated change orders, design waivers, or test variances for potential hazards and/or vulnerabilities?	Y	Through the Change Management Board.
Has the project sponsor ensured the performance of safety and security analyses for proposed workarounds?	Y	This is included in the Rail Activation Committee scope during testing/startup activities. BBII's Safety & Security Certification flow chart identifies the process.
Has the project sponsor demonstrated through meetings or other methods the integration of safety and security in the following? • Activation Plan and Procedures • Integrated Test Plan and Procedures • Operations and Maintenance Plan • Emergency Operations Plan	 Y Y N N	A Rail Activation Plan has been prepared and is being refined for initial testing and operation of the new EMUs. The Rail Activation Committee has been meeting regularly since May 2019 and a Rail Activation Schedule has been prepared and an Integrated Test Plan and Procedures developed.
Has the project sponsor issued the final safety and security certification?	N	The project is in construction. The required completion date is 9-26-2024. A revised date of 12-31-2024 has been proposed.
Has the project sponsor issued the final safety and security verification report?	N	Project is in construction. Required Completion Date is 9-26-2024. A revised date of 12-31-2024 has been proposed.
Construction Safety		
Does the project sponsor have a documented/implemented Contractor Safety Program with which it expects to comply?	Y	The Design/Build contractor's "Construction Safety Program" and "Health and Safety Plan" have been accepted.

Safety and Security Checklist		
Area of Focus	**Y/N**	**Notes/Status**
Does the project sponsor's contractor(s) have a documented company-wide safety and security program plan?	Y	System Safety Plan submitted and Approved 2/1/2017. An update was provided on 6/28/21.
Does the project sponsor's contractor(s) have a site-specific safety and security program plan?	Y	Rev. 2 submitted and Approved 12/9/2016
How do the project sponsor's OSHA statistics compare to the national average for the same type of work?		There were two reportable injuries for the 70,011 hours worked for the month of August 2022. The Reportable Injury Rate (RIR) for 2022 through August is 2.39, which is below the national average of 2.50. The project's overall RIR since inception is 1.75.
If the comparison is not favorable, what actions are being taken by the project sponsor to improve its safety record?		The D-B contractor reviews all incidents with its employees at its monthly safety meetings.
Federal Railroad Administration		
If a shared track, has the project sponsor submitted its waiver request application to FRA? (Please identify specific regulations for which waivers are being requested.)	Y	Waivers approved 1/13/2016 for 49 CFR: 49 CFR 238.203, Static end strength; 238.205, Anti- climbing mechanism; and 238.207, link between coupling mechanism and car body.
If a shared corridor, has the project sponsor specified specific measures to address safety concerns?	Y	In Caltrain/TA Services/UP Passenger Train Emergency Preparedness Plan and Caltrain System Safety Program Plan
Is the Collision Hazard Analysis underway?	Y	Car body testing and Collision Analysis have been completed and the report sent to FRA.
Other FRA required Hazard Analysis – Fencing, etc.?	TBD	This is an operating ROW, and no service change is expected. Additional right of way fencing is being installed.
Does the project have Quiet Zones?	TBD	This is an operating ROW, and no service change is expected.
Does FRA attend the Quarterly Review Meetings?	Y	An FRA representatives attended QPRM No. 22 on December 5, 2022.

Attachment C Action Items

The following table presents the open Action Items as of the date this report was prepared. New items are indicated by colored text, items whose status has changed from the prior listing are italicized and completed items have been shaded.

No.	Action Item	Discussion	Agreed Due Date	Responsibility Agency/Name	Status
13.02	JPB to submit a Request for Amendment (RFA) to Caltrain's Positive Train Control Safety Plan (PTCSP) under 49 CFR Sec. 236, Subpart I; the RFA will document the design and performance of its 2SC grade crossing warning system.	FRA is considering a combined RFA for both the 2SC solution and the Crossing Optimization Process. Because both 2SC and Crossing Optimization Projects have FRA approved Test Plans, completion of the RFA(s) is not and will not impact work for either project.	TBD. Awaiting direction from FRA.	Cocke	A draft of the2SC RFA has been submitted to FRA. However, FRA must now determine if there will be two separate RFAs or one combined RFA. *The JPB is staying in close touch with the FRA, and they are witnessing the cutovers.*

Attachment D Top Project Risks

The top three (3) risks remain unchanged. A new Risk 346 is now tied with Risks 010 and 349 as the third highest risk. Risk 289 remains unchanged. Changes from the prior report are indicated in italics.

Risk No.	Risk Category		Risk Description	Status
	Cost	Sched.		
209	X	X	TASI may not have sufficient field support resources (RWIC, watchmen, flaggers, signal maintainers) for testing.	TASI work schedules revised, additional RWICs in training, RFP for third-party RWP services.
314	X	X	The contractor may not complete signal and communication design, installation, and testing for the Two-speed check (2SC) modifications within budget and schedule.	A new schedule was adopted as part of the global settlement. Productivity on OCS needs sustained improvement; signal cutovers are delayed to address 2SC software issues.
010		X	Potential for Stadler's sub-suppliers to fall behind schedule or delays in the parts supply chain to result in late completion of vehicles.	Interior panel supplier WCI failed to deliver the parts as promised. Stadler is changing suppliers. This will impact the schedule for trains 7 through 19.
346	*X*	*X*	*SCADA points list will require many more changes than estimated. This risk is caused by the fact BBII makes changes in the field, and these changes are to be implemented by ARINC.*	*Develop Time-and-Material contract for rates with ARINC for changes, as needed. Build out changes into 1 or 2 releases per Segment to make funds available.*
349	X	X	PCEP is requesting shutdown support from PG&E for distribution lines running parallel and in close proximity to the JPB property. Shutdowns are required for the installation of OCS poles and wires at some locations, and if PG&E is unable to perform that work in time, OCS installation will be delayed and installation efficiency will also be affected. Based on the current schedule, PG&E will need to provide support in S1 and S2 by the end of January, but PG&E is projecting closer to March for when the support can be provided.	1. Escalating the matter within PG&E to hopefully advance the schedule. 2. Work with BBII on potential alternative installation methods to decrease the number of locations that requires support from PG&E. 3. If PG&E schedule does not change, look at alternative windows outside of currently planned weekend shutdowns to complete the sections as PG&E schedules the shutdowns.
289	X	X	Delivery of permanent low voltage (LV) power for power drops for new signal and WPC locations along PCEP alignment	Weekly meeting with PGE service manager and PGE management to present challenges and present priority LV permanent power locations.
Top six (6) risks as shown on the Risk Register dated 2-24-2023				

Attachment E Awarded Contracts

The current list of contracts numbers over 181. Eighty-nine (89) contracts have values over $50,000, and seventy-four (74) have values over $100,000. The total value of awarded contracts is provided in the Core Accountability Table of this report. The following tabulation is all contracts with current values of $1 million or higher as of December 31, 2022.

Contractor Name	Contract Value
Total	**$ 2,226,686,619.16**
BALFOUR BEATTY INFRASTRUCTURE, INC	$ 1,097,149,880.96
STADLER US INC	$ 555,359,217.12
PACIFIC GAS & ELECTRIC COMPANY - SA scopes	$ 124,106,400.00
TRANSITAMERICA SERVICES, INC. - Other scopes	$ 107,027,328.42
GANNETT FLEMING TRANSIT & RAIL SYSTEMS	$ 76,018,297.00
PROVEN MANAGEMENT, INC. - Tunnel scope	$ 47,059,351.90
URS CORPORATION	$ 36,361,332.00
JACOBS PROJECT MANAGEMENT CO.	$ 35,500,000.00
LTK CONSULTING SERVICES, INC.	$ 30,428,595.66
B & G TRANSPORTATION GROUP, LLC	$ 10,781,212.41
PROVEN MANAGEMENT, INC. - CEMOF scope	$ 9,476,816.16
JPMORGAN CHASE BANK, N.A.	$ 8,853,865.41
HNTB CORPORATION	$ 8,585,671.39
RAIL SURVEYORS AND ENGINEERS, INC.	$ 8,381,774.32
Hatch Associates Consultants, Inc	$ 6,416,404.34
ARINC INCORPORATED	$ 5,523,853.39
ICF JONES & STOKES, INC.	$ 5,162,702.77
NC 2121 SEC VENTURES LLC	$ 4,394,220.07
FIRST AMERICAN TITLE COMPANY	$ 4,290,819.00
RREF III-P TOWER PLAZA LLC	$ 3,868,440.02
STATE OF CALIFORNIA	$ 3,629,200.00
DCONSULT, LLC.	$ 2,542,143.16
SHIMMICK/DISNEY JOINT VENTURE	$ 2,400,000.00
PRICE FORBES & PARTNERS, LTD	$ 2,125,000.00
NORMAN E. MATTEONI ATTORNEY BAR TRUST	$ 2,016,000.00
ASSOCIATED RIGHT OF WAY	$ 1,950,836.25
PROVEN MANAGEMENT, INC. - SSF scope	$ 1,866,575.18
BENDER ROSETHAL, INC.	$ 1,834,015.49
WELLS FARGO INSURANCE SERVICES USA, INC	$ 1,493,268.60
WSP USA INC	$ 1,377,723.13
COMPUCOM SYSTEMS, INC.	$ 1,374,628.58
USI INSURANCE SERVICES NATIONAL, INC.	$ 1,279,180.42
TRANSITAMERICA SERVICES, INC. - Santa clara drill track	$ 1,186,015.00

Attachment F Rolling Stock Vehicle Status Report

- **Manufacturer/Model Year/Vehicle Model or Type/Propulsion:** Stadler Bi-level Electric Multiple Unit (EMU) Commuter Rail vehicles (a variant of Stadler's "KISS" product line. The JPB plans to operate the vehicles initially in 7-car trainsets and later expand to 8-car trainsets.
- **Piggyback or Option:** The contract contains an option for up to 96 additional EMUs, with the price varying depending on the date the option is exercised. Option vehicles ordered prior to December 31, 2018, are purchased at the original price.
- **Number of Vehicles:** Initial Order of 96 EMUs to be delivered as 6-car trainsets; the current order is 133 EMUs delivered as 7-car trainsets.
- Contract Advertisement Date: August 21, 2015
- Contract Award Date: August 15, 2016
- Price per Vehicle (Initial Order): $26,408,000 per 6-car trainset
- Planned Date of First Vehicle Delivery /Actual: March 20, 2022 (Actual)
- Conditional Acceptance of First Trainset (TS-3): July 25, 2022
- Initial Vehicle Order (Number of Vehicles and Configuration): 96 EMUs delivered as 6-car trainsets
- Number of Option Vehicles Included in Contract: 96
- Buy America Domestic Content Percentage Required: 60%
- Domestic Content Percentage per Pre-award Audit: 79.38%
- **Latest Domestic Content Percentage Reported and Date:** The Post-Delivery Buy America Audit Report states that the overall average domestic content of a seven (7) car trainset is 74.3%. The domestic content was reported to vary from 70% to 77% for the four (4) different car type variants.
- Date of Pre-Award Audit: May 25-26, 2016
- Pre-award Audit Report Date: June 21, 2016
- Intermediate Buy America Audit Date: An intermediate review was conducted March 19-21, 2018. Stadler provided a virtual Buy America status update to the JPB's Buy America team on June 22, 2020. The JPB conducted an Intermediate Buy America Audit on October 25-27, 2021; however, the auditors were unable to verify the domestic content because the required information was not provided by Stadler.
- Date of Post-Delivery Audit: June 27-28, 2022
- Post-Deliver Audit Report Date: July 11, 2022

Attachment G Project Milestones / Key Events

Milestone	Baseline	Grantee Forecast	Summary of Milestone / Event
New Starts/Core Capacity Grant Agreement:	Not in MPS	05/2017 (A)	
Design/Build Notice to Proceed:	12/2015	06/2017 (A)	
Arrival of the first EMU in Pueblo, CO	N/A	2/27/2021 (A)	
Arrival of First EMU at JPB	07/2019	4/20/2022(A)	
Final Engineering (FE) Completion:	04/2018	*8/10/2023* (P)	
Systems Integration Testing Completed:	01/2019	*4/1/2024 (P)*	
Segment 4 Complete to Begin EMU Testing:	11/2019	*5/28/2023 (P)*	
Revised Milestone 1 (Segments 3 and 4) Complete	N/A	*5/28/2023*	
Completion of Interconnection from PG&E to TPSS 2	N/A	1/29/2021 (A)	
Design/Build Substantial Completion:	02/2019	*4/1/2024 (P)*	
Conditional Acceptance of First EMU Trainset:		7/25/2022 (A)	
PG&E Provides Permanent Power:	09/2021	8/27/2022(A)	
Pre-Revenue Operation Completed:	05/2020	*4/5/2024 (P)*	
Revenue Service Date (without Risk Contingency):	12/2021	04/15/2024 (P)	
Revenue Service Date (with Risk Contingency)	N/A	09/26/2024	
FFGA Required Completion Date (RCD):	05/2020	12/31/2024 (P)*	

Note: *JPB's proposed FFGA RCD in its Recovery Plan
Currently, the RSD with contingency is 9/26/2024, the same date that the JPB had been using as the RCD; the JPB has proposed a revised FFGA RCD of 12/31/2024 in its Recovery Plan.

Attachment H Roadmap to Electrified Rail Service

Electrified operations on the Caltrain system will occur in stages. The first stage will be the electrification of Segment 4 of the PCEP, including a designated test track. For clarity, Segment 4 is the southerly most segment of the PCEP. Initial electrification will require completion of TPSS 2; completion of the interconnection between PG&E's FMC substation in San Jose and TPSS 2; completion of the OCS system in Segment 4; completion of the signals, communications, and SCADA systems in Segment 4; and testing and commissioning of the above components as well as safety certification of the relevant components. Traction power substation #2 (TPSS-2) was electrified on August 27, 2022, and testing of the traction power components is underway. The contractor has encountered problems in successfully completing short-circuit testing of the TPS and OCS in Segment 4. The schedule for live-wire testing in Segment 4 is now on hold pending a comprehensive review of the required documentation. Completion of work in Segment 4 is designated as Interim Milestone 1 in the BBII Electrification Design-Build contract. Following the electrification of Segment 4 and the test track, local testing of the EMU vehicles will commence. *The first four EMU trainsets are awaiting an energized OCS to begin dynamic testing.* The JPB negotiated a change with BBII, its Electrification contractor, to redefine Milestone 1 to include all work in Segments 3 and 4. This change will create a 21 mile stretch of electrified track which will permit more efficient burn-in of the EMUs. *The projected completion date for Milestone 1 has improved and is now May 28, 2023.*

The second stage of electrification will include the completion of the remaining Segments 1 and 2, and the individual elements of each plus the integrated testing, commissioning, and safety certification of the entire project. Final Completion for purposes of the JPB's Core Capacity FFGA requires fourteen (14) seven-car trainsets in weekday revenue service. The FFGA has a Required Completion Date (RCD) of August 22, 2022. *The JPB has proposed a revised RCD of December 31, 2024, in its Recovery Plan dated September 30, 2022.* The JPB is currently forecasting the commencement of Revenue service with its new EMUs on September 26, 2024.

The PCEP has an active Rail Activation Committee (RAC) to coordinate the various activities needed to successfully initiate electrified rail operations. The RAC is now being chaired by Mark Clendennen. The RAC includes representatives from JPB employees assigned to the PCEP, PCEP's technical consultants, the JPB's Rail Operations group, and more recently from BBII, the Electrification contractor. The RAC continues to refine coordination between the rail activation, systems integration, and testing and commissioning meetings to make the resulting RAC meetings more productive. *The RAC is meeting weekly on Thursday mornings, the most recent meeting was held on February 23, 2023.*

The JPB held a Testing and Commissioning Workshop on December 14, 2021, for all of the electrification and related contractors. The objective of the workshop was to assess the readiness of the project to achieve Interim Milestone 1, Segment 4 Ready for EMU Testing. The workshop was generally regarded as beneficial by the PCEP team. Another technical workshop to review Sectionalization, Short-circuit, and HiPot testing procedures was scheduled for January 10, 2023, but has been cancelled~~postponed~~.

The Rail Activation manager reports that a rewrite of the Rail Activation Plan is underway. The revised plan will have increased emphasis on the JPB's readiness to operate revenue service with electrified equipment. No date has been identified for the completion of the revised RAP.

The PCEP risk lead has completed incorporating the Rail Activation risks into a consolidated risk register for the PCEP. The RAC's Rail Activation Schedule is still in the process of being incorporated into and integrated with the body of the Integrated Master Schedule and the attributes of the rail activation activities are being refined by the RAC. The RAC uses a Segment 4 Testing and Commissioning Schedule to focus on the Electrification contractor's Milestone 1, Segment 4 Ready for EMU Testing. The objective of this schedule is to capture the key activities required to achieve Milestone 1 and to update the status of those activities to reflect real time circumstances. A copy of the most recent Segment 4 Testing and Commissioning schedule is shown in Figure H-1.

Figure H-1 Segment 4 Testing and Commissioning Schedule

Seg 4 SIT Rev 11 | Seg 4 SIT - Rev 11 | Printed 9-Mar-23 | Data Date 20-May-23

Activity ID	Activity Name	Original Duration	Start	Finish	Calendar
	Seg 4 SIT Rev 11				
	Site Integration Testing (SIT)/EMU (Stadler)				
	BBII				
	Traction Power/OCS Intergrated Testing				
A39	Seg 4 Short Circuit Re-Test	2	20-May-23	21-May-23	WND SIT
	CEMOF Live Running				
122	JPB to Issue Notification of Owner Readiness	0	22-May-23		5WD
121	Overhead Catenary Power Available	0		22-May-23	5WD
A40	Day 1 - North Lead and Yard	1	22-Jul-23	22-Jul-23	WND SIT
A41	Day 2 - South Lead and Yard	1	23-Jul-23	23-Jul-23	WND SIT
A42	Catenary Adjusments (CEMOF)	3	24-Jul-23	26-Jul-23	5WD
A43	Re-Testing	1	29-Jul-23	29-Jul-23	WND SIT
	SCDT Live Running				
123	Overhead Catenary Power-On for EMUs (Stadler)	0	22-May-23		5WD
A44	Day 1 - SCDT	1	5-Jun-23	5-Jun-23	5WD
A45	Catenary Adjustments	1	6-Jun-23	6-Jun-23	5WD
A46	Re-Testing	1	7-Jun-23	7-Jun-23	5WD
	SCDT EMU Testing (Stadler to Verify Start Date and Sequence)				
A47	Double Track Set (Static-Coupling) (Stadler)	1	6-Jun-23	6-Jun-23	Stdlr
A48	Phase Break (Stadler)	2	6-Jun-23	7-Jun-23	Stdlr
A50	Radio Teating (Stadler)	1	8-Jun-23	8-Jun-23	Stdlr
A49	Operator Training (Stadler)	3	6-Jun-23	8-Jun-23	Stdlr
A73	EMU Track Circuit Verification	1	12-Jun-23	12-Jun-23	Stdlr
A51	PTC Testing (Install Validation) Static/Dynamic (Stadler)	5	12-Jun-23	16-Jun-23	Stdlr
	Main Track Live Running				
A52	Low Speed Test (<15MPH)	1	10-Jun-23	10-Jun-23	WND SIT
A54	Medium Speed Test (<35MPH)	1	11-Jun-23	11-Jun-23	WND SIT
A55	Catenary Adjustments	3	12-Jun-23	14-Jun-23	5WD
A81	PTC Testing (Install Validation) Static/Dynamic (Stadler)	5	12-Jun-23	16-Jun-23	Stdlr
A77	Stadler 50 MPH Break Test	1	17-Jun-23	17-Jun-23	WND SIT
A56	Full Speed Qualification (MAS)	1	18-Jun-23	18-Jun-23	WND SIT
A57	Catenary Adjustments	1	19-Jun-23	19-Jun-23	5WD
A74	Safety/Certification Final Paper Documentation	30	19-Jun-23	18-Jul-23	7CD
	Stadle/JPB				
	EMU Dynamic Commisioning & Testing (Stadler)				
A61	EMU - PTC Functionallity (Mainline) (Stadler)	4	24-Jun-23	2-Jul-23	WND SIT
A76	EMU - Wabtec to Issue Test Report	5	3-Jul-23	7-Jul-23	5WD
	EMU - EMI Qualification				
A62	EMU - EMI Qualification (Stadler)	5	10-Jul-23*	14-Jul-23	Stdlr
	EMU - Burn In (Trains 3&4)				
A63	1000 Mile Burn In (Stadler) Train 3	20	17-Jul-23	11-Aug-23	Stdlr
A79	Conditional Acceptance Inspection (Stadler) Train 3	5	14-Aug-23	18-Aug-23	Stdlr
A78	1000 Mile Burn In (Stadler) Train 4	20	21-Aug-23	15-Sep-23	Stdlr
A80	Conditional Acceptance Inspection (Stadler) Train 4	5	18-Sep-23	22-Sep-23	Stdlr
	EMU - Software Validation Dynamic Testing				
A67	EMU Double Traction Test (Mainline) (Stadler)	20	25-Sep-23	20-Oct-23	Stdlr

Actual Work | Critical Remaining Work | Remaining Work | Milestone

Balfour Beatty Infrastructure Inc.

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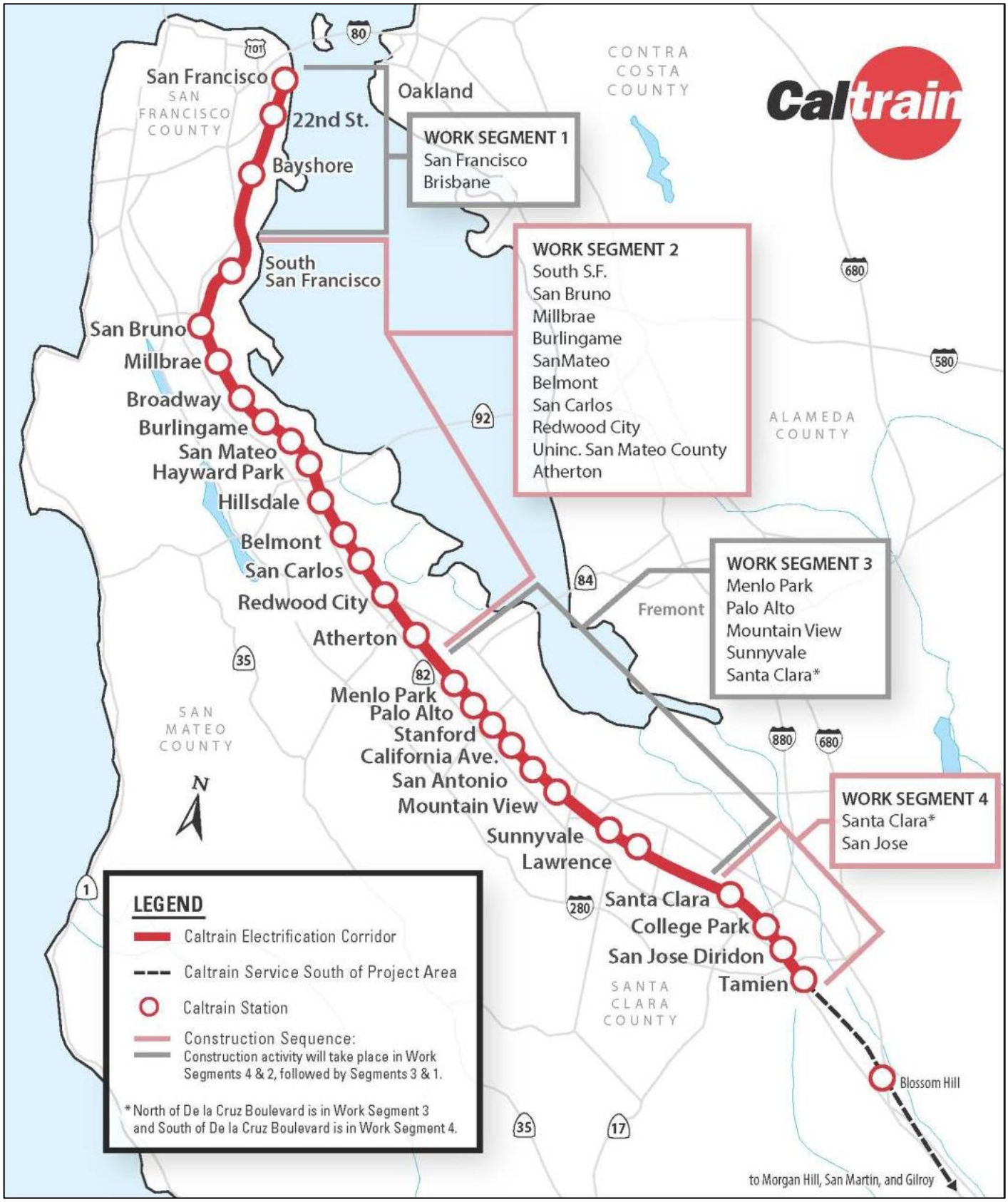
SIT 11

Attachment I Project Map



Attachment J PMOC Team

The report was prepared by the Task Order Manager, **Mike Eidlin**, J.D. (KKCS) who has more than 40 years of complex project management experience including over 28 years in transit. Mr. Eidlin possesses a B.S. degree, a graduate Degree of Engineer, and a Juris Doctor degree. He is a licensed attorney in the State of Oregon. He has been working as a PMOC for 17 years.

Brett L. Rekola, **P.E. (KKCS)** contributed to the preparation of the report and provided the Quality Assurance of the report. Mr. Rekola is the Program Manager for KKCS' FTA PMOC prime contract. He is a California professional civil engineer with more than thirty (30) years of experience managing railroad maintenance, planning, and design, construction, and rail operations. He has served as a program manager delivering port/rail/public works projects and programs.

Nancy Voltura (KKCS) assisted with the report. Ms. Voltura has over forty (40) years of Quality Assurance (QA) experience working as a QA Engineer, QA Auditor, and QA Manager on large design and construction projects. Ms. Voltura is a trained Apparent Cause Analyst evaluating heavy construction quality issues, is a trained professional QA Auditor and has been a certified Lead QA Auditor per ASME/NQA-1 and N45.2.23 standards.

Kevin Byers, P.S.P. (KKCS) assisted with the report. He is KKCS' Project Scheduling Manager, holds a B.S. degree in Construction Management, and has 29 years of experience in scheduling and claims analysis for railroad and rail transit projects.

Dan Holzman, P.E., (KKCS) assisted with the report and is KKCS' Cost Estimation Manager. Mr. Holzman has a B.S. degree in Environmental Engineering and M.S. degree in Civil Engineering and holds a license as a Professional Engineer in Massachusetts. He has over thirty-eight (38) years of experience in construction and engineering and is a Certified Cost Professional.

The administrative Quality Control review of this report was done by Chelsea Ellis, (KKCS). Ms. Ellis has a Bachelor of Science degree in Business Administration and more than ten (10) years of experience providing quality review checks on various technical documents. Ms. Ellis was assisted by **Janice Johnson, (KKCS)**, who also serves as the Contracts & Terms Manager. Ms. Johnson has a background in English Studies and over twenty (20) years of experience providing quality review checks of PMOC work products.