Project Monitoring Report (PMR)
March 2022

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

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

May 4, 2022

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

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

PMOC Firm: **Kal Krishnan Consulting Services, Inc. (KKCS)**
800 South Figueroa Street, Suite 1210
Los Angeles, CA 90017

PMOC Lead: Michael B. Eidlin
Length of Time Firm Assigned to Project: 6 Years, 9 Months
Length of Time Person Assigned to Project: 6 Years, 9 Months

Table of Contents

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; the resulting electrified fleet will consist of nineteen (19) seven-car trainsets. The additional thirty-seven (37) EMUs are not part of the JPB's Core Capacity grant. 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 the 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 has requested that the JPB submit a Project Recovery Plan for the PCEP. The plan was originally due by October 8, 2021; however, the FTA has agreed to defer receipt of the plan until the JPB completes 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 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 of a global settlement with Balfour Beatty Infrastructure, Inc. (BBII), the electrification design-build (D-B) contractor, and a recently completed scrub of the PCEP budget. The increased budget supports completion of the project and delivery of electrified service in 2024. The JPB began reporting against the revised budget in its December 2021 Monthly Progress Report.

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

- Scope – The scope remains as planned.

- Schedule – The JPB revised its Master Project Schedule (MPS) in June 2021 to reflect a Required Completion Date (RCD) of September 26, 2024, based on the results of the FTA's December 2020 Risk Refresh. The PCEP team, in the course of negotiating the global settlement with BBII, received, reviewed, and accepted BBII's re-baselined schedule for the remaining Electrification contract work. The JPB is revising its Master Project Schedule (MPS), as part of its schedule scrub, to incorporate information from BBII's re-baselined schedule and other project schedule details and is expected to present this updated MPS as part of its Recovery Plan. The JPB did not formally adopt a re-baselined schedule for project completion at its December 6 Special Meeting; however, the $2.44 billion budget adopted by the board is premised on completing the project by September 2024. *The JPB proposed a new Required Completion Date of December 31, 2024 in the Recovery Plan submitted to the FTA on April 1, 2022. JPB is currently forecasting commencement of Revenue Service with its new EMUs between April 1 and July 1, 2024.*

  Cost – The FFGA budget is $1.931 billion in year of expenditure (YOE) dollars. The JPB revised its budget for the PCEP to $2.264 billion in June 2021 based on the results of the FTA's December 2020 Risk Refresh. This represented an increase of $333 million from the FFGA budget. The JPB completed a "budget scrub" in conjunction with the conclusion of global settlement negotiations with BBII. Based on the results of the global settlement with BBII and its budget scrub, the JPB, developed a revised budget of $2.44 billion. The JPB approved this revised budget at its Special Meeting on December 6, 2021. This new budget reflects an additional increase of $176 million from the post-risk refresh budget and 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.*

- Significant Project Activities and/or Key Milestones

  - *A serious incident occurred on the railroad March 10, 2022. A southbound Caltrain passenger train carrying 75 passengers struck a piece of on-track construction equipment that was working on the Electrification project. The driver of the construction vehicle, the Engineer, and two passengers were transported to the hospital. The incident is under investigation by the National Transportation Safety Board (NTSB), the Federal Railroad Administration (FRA), the California Public Utilities Commission (CPUC), and the California Occupational Safety and Health Agency (Cal/OSHA). The JPB, in response to the incident, immediately imposed a temporary stop work period for all contractors. Off-track work resumed on March 23, 2022 and on-track work resumed on March 28, 2022.*

  - PG&E and Silicon Valley Power have required the PCEP to conduct a Single Phase Study to demonstrate that the electrified rail operations will not degrade service for existing customers. The study has been in progress for over a year but has failed to produce a result that satisfies the power companies. The issue was elevated in early 2021 to senior management at PG&E. *PG&E's position is that no load may be placed on the system until the Single-Phase Study is completed and the Transmission Load Operating Agreement (TLOA) between the JPB and PG&E has been executed. The PCEP now reports that the Single Phase Study will be complete on May 23, 2022, followed by a "clearance" period of 30-60 days for notification of PG&E's customers. Other technical issues related to the battery backup system for TPSS-2, supplied by the design-build contractor, may further delay the delivery of 115 kV power to TPSS-22.*

- *The JPB and its contractor were preparing for a major signal cutover involving 41 signal locations and 17 grade crossings in a seven (7) mile stretch of Segment 2 at the time of the March 10, 2022 incident. The work was re-scheduled and will now start on May 2, 2022. The JPB is working with its contractor to determine whether the delay will have an impact on the completion of the signals work.*
- *The first two (2) Stadler EMUs (TS-3 and 4) arrived undamaged at the JPB on March 20, 2022. The next pair of trainsets (TS-2 and 5) are scheduled for delivery in June 2022.*
- The PCEP and BBII teams are moving forward with renewed partnering activities following the conclusion of the global settlement.
- The first major milestone in the Electrification contract is the completion of Segment 4, "Ready for EMU Testing;" this intermediate milestone is not on the PCEP's critical path. The date for completion of this work has continued to slip for a variety of reasons.

1.3 Major Issues and/or Concerns

Summary of Issue/Concern	PG&E – Silicon Valley Power Single Phase Study
Date Identified	September 2021
Status	PG&E and Silicon Valley Power have required the PCEP to conduct a Single Phase Study to demonstrate that the electrified rail operations will not degrade service for existing customers. The study has been in progress for over a year but has failed to produce a result that satisfies the power companies. The issue was elevated earlier in 2021 to senior management at PG&E. *PG&E's position is that no load may be placed on the system until the Single-Phase Study is completed and the Transmission Load Operating Agreement (TLOA) between the JPB and PG&E has been executed. The date for energizing TPSS-2 remains uncertain.*
Project Sponsor Action	*The JPB is encouraging its contractors to complete all required work to allow PG&E to energize the substation as early as possible. Multiple meetings are being held weekly between the parties in an effort to expedite this effort.*
PMOC Recommendation	Use all available resources to achieve a timely resolution of this difficult issue.

Summary of Issue/Concern	Timely Completion of Signals Design and Installation
Date Identified	2019
Status	The pace of signals design continues to be slower than required to achieve a satisfactory completion date for the project. Installation of the signal equipment, including cutovers, continues to go smoothly although somewhat slower than anticipated.
Project Sponsor Action	*The major cutover of 17 locations was delayed by the incident that occurred March 10, 2022 and has been re-scheduled to start on May 2, 2022. The work will extend over a three (3) week period supported by single-tracking of Caltrain service. The JPB is working with its contractor to determine whether the delay will have an impact on the final completion of the signals work.*
PMOC Recommendation	*Successfully complete the cutover in Segment 2.* Continue to work closely with the design teams to increase productivity and continue to look for ways to efficiently group cutovers to reduce the time required.

Summary of Issue/Concern	Management Capacity and Capability
Date Identified	February 2019
Status	*A new dedicated Systems Integration lead and a new dedicated Project Controls lead are now in place along with an additional scheduler. The JPB has also engaged an independent consultant to review the PCEP's policies and practices.*
Project Sponsor Action	The newly approved budget includes funding for additional resources to support the successful completion of the project. *A complete staffing plan has been submitted as part of the FTA Recovery Plan.*
PMOC Recommendation	Continue the increased emphasis on project controls and systems integration and testing activities and assign technical staff to assist in Systems Integration and testing and commissioning coordination and oversight. Take advantage of the opportunity presented by apparent delays in the schedule for achieving Interim Milestone 1 to clarify roles and responsibilities as between the JPB and BBII and within the JPB/PCEP organization, and catch-up required paperwork.

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:	*April 1, 2022*				
Project Detail					
Oversight Frequency:	Monthly				
Element	**Status**			**Prior Status (G/Y/R)**	**Issue or Concern**
	G	**Y**	**R**		
PMP		Y		Y	The PMP requires updating to address testing and commissioning.
MCC	G			G	New resources are being deployed but the reconfiguration of the PCEP team is not complete, however, improvements are noted.
Cost		Y		Y	*The approved budget for the PCEP budget is $2.44 billion. This budget includes the cost of the global settlements with BBII and ProVen, and the budget scrub completed by the PCEP team. The JPB has developed a financial plan to support the new budget, and this plan is being further refined for presentation to the FTA in the Recovery Plan delivered on April 1, 2022.* A recent bond sale provides $150 million in funding.
Schedule	G			G	*The Recovery Plan delivered to the FTA on April 1, 2022 proposes a revised Required Completion Date of December 31, 2024.* The global settlement concluded with BBII is based on achieving substantial completion by April 1, 2024 and final completion by July 31, 2024. The global settlement includes incentives for earlier initiation of revenue service, earlier completion of signal cutovers and earlier completion of contract work.
Quality	G			G	Some uncertainty related to Electrification contractor's Buy America compliance.
Safety		Y		G	*The serious safety incident that occurred on March 10, 2022 remains under investigation by the NTSB, CPUC, FRA and Cal/OSHA.* The performance by the Electrification contractor has improved.
Risk	G			G	The global settlement with BBII has significantly reduced uncertainty related to that contract. Lack of agreement by PG&E that the electrified rail system will not produce problems for its network and customers. EMU delays, workforce retention and supplier problems.
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 February 28, 2022

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	*$62,115,581*	*Current contingency usage is being tracked closely and has been modest since the global settlement.*
	Unallocated Contingency	$162,620,294	*$27,884,507*	
	Total Contingency	$315,533,611	*$90,000,088*	
Schedule	Required Completion Date	August 22, 2022	*December 31, 2024*	*Current forecast is based on the JPB's Recovery Plan Rev 5 submitted to the FTA on April 1, 2022.*

Project Progress		Amount ($)	Percent of Total
Total Expenditures [4]	Actual cost of all eligible expenditures completed to date [5]	*$1,558,554,562*	*65.13%*
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]	*$1,479,282,903*	*61.81%*

Contracts Status		Amount ($)	Percent
Total Contracts Awarded	Value of all contracts (design, support, construction, equipment) awarded; % of total value to be awarded [6]	*$2,171,553,856*	*94.29%*
Construction Contracts Awarded	Value of construction contracts awarded; % of total construction value to be awarded [5]	*$1,836,754,450*	*99.54%*
Physical Construction Completed	Value of physical construction (infrastructure) completed; % of total construction value completed	*$1,037,270,401*	*56.21%*

Rolling Stock Vehicle Status	Date Awarded	No. Ordered	No. Delivered
Electric Multiple Unit (EMU) commuter rail vehicles	08/2016 (A)	133	*2*

Next Monthly Meeting Date:	*May 2022 (TBD)*
Next Quarterly Review Meeting Date:	*April 26, 2022*

[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 Recovery 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 2022: $1,506,192,210
Pre-FFGA Costs: ($49,581,599)
Post-FFGA Costs: $1,456,610,611
[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: ($90,000,088)
Budgeted Contracts (Post-FFGA): $2,303,109,010
[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: $1,836,675,933
Forecasted Construction Contract Changes: $8,955,724
Forecast of Value of Construction Contracts: $1,845,631,657

Grant Information

Dollars in thousands reported as of December 31, 2021; this information updated quarterly.

FAIN (Source)	Funds Committed*	Funds Disbursed	% Disbursed
Local	$996,521	*$678,832*	*68%*
Federal	$934,150	*$589,031*	*63%*
Total	**$1,930,671**	***$1,267863***	***66%***

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

2.0 PMOC Observations and Findings

This progress report covers the period from March 2, 2022 through April 4, 2022. The information contained in this report is based on the PMOC's participation in the virtual monitoring meetings held on March 28, 29, 31 and April 4, 2022, 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 prepare 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.

- Monitoring the progress of the PCEP team as it continues to implement the following initiatives put in place by the new CalMod Interim Chief Officer (ICO):
  - 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.
  - Additional changes within the PCEP organization.
  - Completing the documentation associated with the budget "scrub" and schedule reviews following the global settlement with BBII and the JPB's approval of the increased PCEP budget. Some of this material will be incorporated into the FTA Recovery Plan.
  - Completion of the FTA Recovery Plan and a similar Remediation Plan for the California High Speed Rail Authority (CHSRA). *The JPB, as noted above, submitted its Recovery Plan to the FTA on April 1, 2022.*
- *The PMOC has begun its review of the Recovery Plan that was submitted on April 1, 2022.*
- 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; this review is awaiting additional documentation from the JPB and its contractors.

- The PMOC will continue to closely monitor the PCEP's schedule and schedule management practices, including changes in the performance of BBII and its sub-contractors subsequent to the global settlement.
- *The PMOC is continuing its review of the details of the JPB's global settlement with BBII and expects to receive additional documentation shortly.*
- The PMOC continues its preparation of a modified Readiness for Service Review focused on the initial electrification of Segment 4 and the start of testing and commissioning of the first EMU trainset. *The timing of this review continues to slip as the schedule for completion of Interim Milestone 1 is delayed due to the lack of complete documentation.* This review is being performed under a Programmatic Task Order.

2.2 Oversight Triggers

The FTA, as noted in Section 1.2 above, has 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 such time as 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 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 PCEP's new leadership is aware of the importance of updating these plans and recently stated that it expects to complete updates to the PMP and Quality Management Plan (QMP) by June 30, 2022.* The PMOC will review these materials as they become available.

The JPB's Rail Activation Committee (RAC) continues to work on its Rail Activation Plan (RAP). The RAP must be in place before testing of the new EMUs can begin. The PMOC continues to monitor and support this work. The PMOC also continues its work on a modified OP-54 Readiness for Service review prior to the electrification of Segment 4 and the commencement of EMU testing. *These activities continue to slip due to delays in the energization of TPSS-2.*

2.4 Management Capacity and Capability

The ICO continues to increase staff in key areas, specifically scheduling and systems integration and testing. The ICO has also initiated an independent review of the projects policies and procedures. *A kick-off meeting for the independent review was held on March 25, 2022.*

One of the continuing challenges facing the PCEP organization is competing demands for technically qualified personnel by the substantial number of transit mega-projects currently underway on the west coast of the U.S., and in the San Francisco Bay Area.

- ***PMOC Comment:*** *The PMOC received an initial version of the fully integrated Master Project Schedule on April 5, 2022. The PMOC has provided preliminary comments on the schedule and is working with the PCEP scheduling team to arrange a review of the next version prior to QPRM No. 20, which will be held on April 26, 2022.*

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 that governs the PCEP's related activities. *The draft agreement is currently out for Native American tribal consultation.* The JPB and its contractor continue to follow the requirements and processes contained in the original agreement.

The PCEP Final Environmental Impact Report (FEIR) forecasts Caltrain ridership of 69,151 daily boardings in the year 2020 and 111,427 daily boardings in 2040, including service in 2040 to the Transbay Transit Center. This ridership represents an increase of 21.1% and 32.1% respectively, over the projected Caltrain ridership in those years without the core capacity improvements.

The JPB also continues to monitor the compliance of its construction contractors with the requirements of its FFGA and the supporting environmental documents. The PCEP reports that tree pruning, and removal is approximately 75% complete. Annual surveys are being conducted as required.

2.6 Project Delivery Method and Procurement

JPB reports all major procurements have been completed 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.

The JPB, as one of its actions at the December 6, 2021 Special Meeting, approved an $18.5 million increase in contract authority for Jacobs, for a total of $35.5 million, and an eight (8) month extension of the contract to December 31, 2024.

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 nearly complete on the TPS elements of the project. Design continues on the signal related work which is on the PCEP's 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 are underway in all disciplines and all segments of the corridor. *Testing and commissioning activities are also underway in Segment 4 in preparation for completion of Interim Milestone 1, Segment 4 Ready for EMU Testing.*

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 is negotiating a 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, at its June 7, 2018 meeting, approved contracts to acquire and overhaul two (2) used AM-7 electrified locomotives to perform initial testing of the electrification system. The locomotives arrived at Amtrak's yard in Oakland, CA, on June 6, 2019, and have been in long term storage 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 elevation discrepancy has been corrected on a portion of the newly extended service pit and only a small amount of electrical work remains to complete the contract. The JPB, as noted above, has negotiated a settlement with ProVen that covers both the Tunnel Notching and CEMOF Modifications contracts.

PG&E Interconnection Construction

The JPB executed Modification 2 to Supplement 2 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 energization of this interconnection has been delayed for several reasons including an incomplete Single Phase Study, lack of completed test documentation, installation of incorrect back-up batteries in TPSS-2, and the clearance period required by PG&E.*

The alignment of the interconnection between PG&E's East Grand Substation in South San Francisco and the PCEP's TPSS 1 was redesigned to underground a greater portion of the service and thereby avoid impacts to an adjacent property owner. *The interconnection is now complete and awaiting completion, testing and energization of TPSS-1.*

Recent Procurements

None currently scheduled.

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 for the work. All OCS and TPS design work is complete. The following issues remain active at this time:

- The design of the signal system remains active and is on the critical path to project completion. As noted earlier, significant effort was focused on the scheduling of the remaining signal design, signal cutovers, and related civil work during settlement negotiations with BBII. Completion of the signal work is scheduled for September 2023. *The major cutover in Segment 2, Work Areas 3 and 4, which was scheduled to start on March 13, 2022, was delayed as a result of the March 10, 2022 safety incident. That work has been rescheduled and will now start on May 2, 2022.* That work is scheduled to take three (3) weeks to complete. *The PCEP signals team is working with BBII and its subcontractors to avoid any delays as a result of the work interruption following the March 10, 2022 incident and hopes to complete all Segment 2 signals work in November 2022.*

- The JPB is continuing discussions and negotiations with the UPRR regarding protection at the Reed Street crossing in Segment 4 which is controlled by the UPRR.

  PG&E and Silicon Valley Power have required the PCEP to conduct a Single Phase Study to demonstrate that the electrified rail operations will not degrade service for existing customers. The study has been in progress for over a year but has failed to produce a result that satisfies the power companies. The issue was elevated earlier in 2021 to senior management at PG&E, which led to an independent consultant being hired to try to forge consensus. *However, the utilities continued to ask for additional modelling and a completion schedule had remained elusive until recently. PG&E's position is that no load may be placed on the system until the Single Phase Study is complete, the Transmission Load Operating Agreement between PG&E and the JPB is executed, and all other PG&E requirements are met. The JPB is expected to provide the remaining information necessary to complete the Single Phase Study to PG&E by April 25, 2022.*

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 cost or improve 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 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. The

corridor has been sub-divided into four (4) segments numbered from north to south to manage the electrification and other related work more effectively.

The corridor spans three (3) counties and the JPB must collaborate with Santa Clara County on the south, its home county of San Mateo, and the City and County of San Francisco on the north to exercise eminent domain power as necessary during the ROW acquisition process. The JPB executed an agreement with the Santa Clara Valley Transportation Authority (VTA) to exercise eminent domain on behalf of the JPB for property acquired in Santa Clara County, which includes all of Segment 4 and some portions of Segment 3. The JPB also executed an agreement with the San Mateo County Transit District (SamTrans) to act as the condemning agency for all property in San Mateo County. San Mateo County includes all properties in Segment 2 and some properties in Segments 1 and 3. The JPB was unsuccessful in reaching an agreement with the City Supervisor for the City of San Francisco related to the City's exercise of eminent domain powers on behalf of the JPB for properties located within the City and County of San Francisco (CCSF).

Real Estate Activities

The large majority of real estate activities have been completed. The remaining challenges facing real estate are any remaining 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 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 received only minor comments and will be requesting the FTA's concurrence on the transaction in the near future.
- The JPB's real estate department continues to assist Comcast in completing its remaining relocations.
- 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 signal team to determine potential 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 activities related to third-party utility work:

- *JPB continues to work with Comcast, AT&T, and the fiber optic cable carriers to relocate the approximately 14 remaining conflicts. This number is down from 19 in the February 2022 report. All remaining AT&T and Comcast conflicts are located in Segments 2 and 3.* Discussions with Comcast management were escalated in an effort to expedite the clearing Comcast's remaining conflicts (see Real Estate in Section 2.9 above).

  - **PMOC Observation:** Despite starting very early in the project development process, the process of clearing the third-party utilities located in the corridor has been difficult and remains incomplete. The JPB continues to coordinate closely with the various utility companies, especially on near term conflicts with construction activities.

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.

Two other agreements between PG&E and the JPB remain to be executed. The first is what the JPB has previously referred to as the Interconnect Agreement but is now called the Transmission Load Operating Agreement (TLOA). *This agreement will not be executed, and 115 kV power will not flow to the JPB's substations until the previously mentioned Single Phase Study has been completed and all other PG&E requirements have been satisfied.* The JPB now states that its legal counsel has reviewed the TLOA. The second agreement is a retail power agreement.

Construction of the permanent power feed at PG&E's "FMC" substation in San Jose is complete. Construction of the interconnection to TPSS #2 was completed on January 18, 2021. *Energization of TPSS #2 now depends on the completion of low-voltage testing of the substation components, submission of the required test reports to PG&E, completion of the Single Phase Study and execution of the TLOA between the JPB and PG&E.*

Construction of the interconnection between PG&E's East Grand substation and TPSS #1 is now complete, and work at PG&E's East Grand Avenue substation is also complete. PG&E continues with the permanent modifications to its FMC Substations.

The date for PG&E's supply of permanent power to the PCEP is now August 13, 2022 due to delays in completing modifications to its substations.

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 six (6) crossings, and the CPUC has approved all six (6). The JPB expects to resume preparation of the GO 88B forms for the remaining jurisdictions in the near future. 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. The CPUC had previously raised questions related to the clearance, under windy conditions, between the OCS conductors and wayside devices such as gate arms and antennas. Caltrain operations has identified the problem locations and has ordered articulated gate arms for those locations where that solution can be implemented.

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 prepared a Project Remediation Plan for the CHSRA; the plan is a requirement of the funding agreement between the parties. *The plan has been reviewed by the CHSRA and appropriate portions of the plan are being incorporated into the FTA requested Recovery Plan which was submitted to the FTA on April 1, 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 resolution 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 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.

2.11 Construction

The JPB provided the following report on infrastructure construction activity.

Overhead Contact System (OCS)

- All OCS foundations are complete.
- *Pole erection is complete in Segments 3 and 4 and at the CEMOF. 621 of 2,587 poles remain to be erected* in Segments 1 and 2.
- Wire installation is complete in Segments 3 and 4 and at the CEMOF. Work continues in Segments 1 and 2 with 571,000 of the total 1.5 million linear feet remaining to be installed. The anticipated completion date for construction of the OCS system is May 2023.
- Grounding and bonding of fences, utility manholes and handholes in Segment 4 and at the CEMOF continue.

Traction Power System (TPS)

- Low Voltage testing continued at TPSS-2 including the production of the required test reports which are also needed by PG&E prior to energization. Preliminary punch listing of the various components within TPSS-2 is in progress in preparation for energization of the substation. *The replacement back-up battery power supply is not one of those approved by PG&E, and suitable replacements are being sought for both TPSS-2 and TPSS-1. The date for energizing TPSS-2 is now approximately late June 2022.*
  - *The PMOC's opinion is that these additional delays will have relatively little impact on the overall progress of the PCEP. The PMOC holds this opinion because Milestone 1 does not have the same significance at the present time as it did when the project was planned and the design-build contract was formed. At that time, it was important to have a place to test the EMUs as early as possible while the remaining electrification work was underway. The subsequent delays to both EMU production and electrification construction have reduced the significance of Milestone 1 and barring some further major delay in electrifying TPSS #2, there should be adequate time to receive, accept, and burn-in the EMU's in advance of the JPB's anticipated RSD.*

Table 1 below shows the status of the major elements of each of the individual facilities comprising the TPS.

Table 1 - Traction Power Facilities Progress as of December 31, 2021

Facility	Sitework	Substation Building	Low / High Voltage Equipment	Transformer	Gantry	Overall Percent Complete
TPS-1	95%	88%	98%	100%	94%	96%
TPS-2	99%	100%	100%	100%	100%	99%
SWS-1	93%	89%	96%	100%	89%	93%
PS-1	71%	80%	97%	100%	86%	87%
PS-2	87%	80%	89%	100%	77%	87%
PS-3	34%	70%	5%	90%	15%	43%
PS-4	90%	80%	98%	100%	82%	90%
PS-5	85%	94%	98%	100%	89%	93%
PS-6	93%	94%	91%	100%	93%	94%
PS-7	96%	100%	98%	100%	100%	99%
Wayside Power Cubicles		Required 27; Installed 23				

Notes:
Sitework: Mobilize, Clear and grub, Lighting/Equip Cast in Drilled Hole (CIDH) Foundations, Duct Bank, Drainage, Subgrade, Fence/Concrete Masonry Unit (CMU), Finished Grade;
Substation Building: Earthwork (Excavation/Bedding), Foundation (form, rebar, pour), Set House, Pull Wire;
Low/High Voltage Equipment: Yard Equipment, ATS & AUX, Power Drop;
Transformer: Earthwork (Excavation/Bedding), Foundation (form, rebar, pour), Set Transformer, ABB Fit Up; and
Gantry: Foundations (pothole, drill, pour), Set Gantry, Cables/Pipes/Wires, Gantry Equipment.

Signal System

Design and construction of the signal system is on the critical path to project completion. Once the new signal equipment is in place, the system must be electrically connected or "cut over" to the new equipment. A total of twenty-one (21) cutovers are planned; these involve numerous signals and control points. A control point (CP) is a named location where tracks merge or cross. There is a total of twenty-one (21) cutovers planned; thus far all but one of the cutovers are complete in Segment 4 and one cutover is complete in Segment 2. The JPB expects to complete all remaining signal cutovers in late 2023. Early completion of the signal cutovers is incentivized in the global settlement. JPB reported the following signal activity.

- *The major cutover of Segment 2, Phases 3 and 4, was cancelled as a result of the March 10, 2022 safety incident and has been re-scheduled to begin on May 2, 2022 and be completed May 22, 2022. A cutover readiness meeting is scheduled for Monday, April 18, 2022.* Rail Operations will single track through the approximately seven (7) mile section to improve contractor access and productivity during the three-week period.
- BBII's re-baselined schedule for the remaining signal work shows a total of fifteen (15) cutover phases remaining; the cutovers are scheduled into eleven (11) discrete periods, which indicates that in three cases more than one cutover phase is occurring at the same time.
- The JPB revised the contractual requirements for completion of Interim Milestone 1 in the Electrification contract to exclude one crossing which is under UPRR control and still incomplete. This will allow the Milestone to be accomplished while the UPRR issue is being resolved. Completion of Interim Milestone 1 will allow the JPB to proceed with the testing of EMUs in Segment 4 and allow the Electrification contractor to satisfy that contractual requirement.
- Installation of conduit and foundations for signal and wayside power cubicles (WPC) continues in all Segments.
- Design work continues for specific grade crossings.

Supervisory Control and Data Acquisition (SCADA)

- *Continued testing of the SCADA network has revealed issues that require additional troubleshooting; field crews are back on-site in early April 2022.*
- The SCADA software has been installed and tested and is 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 following CNPA is still active: Installation of additional flip-up seats in EMU bike cars. This work is being funded locally.*

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. 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 top of rail, and one at approximately 50.5" above top of 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 reported the following progress on the vehicles:

- *Stadler shipped its first two trainsets (TS-3 and TS-4) to the JPB on March 18, 2022 and the vehicles arrived on March 20, 2022. The trainsets were shipped as part of a dedicated special train and arrived without damage.* Stadler's crew will make the trains ready for testing and conduct a series of tests. Approximately one and one-half months is required before the first train will be available for powered testing of Segment 4.
- The FRA conducted a sample car inspection of TS-3 at Stadler's Salt Lake City facility on February 16, 2022.
- The JPB conducted an Intermediate Buy America Audit of Stadler on October 25 - 27, 2021 and the audit report is complete. Stadler is currently reporting domestic content percentages ranging from 69.40% to 81.54% for the various car types which is greater than the required 60% for this contract. The auditor was unable to verify these percentages because Stadler did not provide the necessary documentation. The auditor provided a series of five (5) recommendations and encouraged Stadler to carefully comply with each, so that a satisfactory post-delivery audit can be accomplished on the first delivered vehicle to verify that it satisfies the required domestic content. *The post-delivery audit is expected to be conducted in June 2022, shortly after the delivery of the first trainset to the JPB.*
- Stadler reports continuing problems with material availability and supply chain logistics as well as workforce attraction and retention.
- All final design reviews have been completed.
- *107/133 car shells have been shipped from Stadler – Switzerland and 95 have been received at Stadler's Salt Lake City facility.* Production continues on trainsets 5-16.

Regulatory Issues

- Test Plan: The Pre-Revenue Service Test Plan was submitted to the FRA for approval on January 20, 2021. The FRA provided comments on the plan, which the JPB addressed and resubmitted the plan to FRA. No formal response has been received from the FRA.

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 and began reporting against the new budget with its December 2021 Monthly Progress Report. A brief summary of the changes and the associated chronology follows.

The JPB revised its budget for the PCEP to $2.264 billion in June 2021 based on the results of the FTA's December 2020 Risk Refresh. This represented an increase of $333 million from the FFGA budget. The JPB completed a "budget scrub" in conjunction with the conclusion of global settlement negotiations with BBII. The JPB, based on the results of the global settlement with BBII and its budget scrub, developed a revised budget of $2.44 billion. The JPB approved this revised budget at its Special Meeting on December 6, 2021. This new budget reflects an additional increase of $176 million from the previous budget and a total increase of $509 million from the FFGA budget. The new budget will be incorporated into the JPB's Recovery Plan.

Table 2 below presents the PCEP costs as of February 28, 2022. The JPB re-forecasts the estimated cost at completion (EAC) monthly.

Table 2 – Project Cost Table at 2-28-2022 ($ millions)[1][2]

Description of Work	FFGA Baseline Budget (A)	Proposed Re-Baseline 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**	**$34,031,357**	**($0)**	**$26,226,706**	**$7,804,651**	**$34,031,357**
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	$2,500,000	$2,387,096	($0)	$306,052	$2,081,044	$2,387,096
10.07 Guideway: Underground tunnel	$8,110,649	$31,644,262	$0	$25,920,654	$5,723,607	$31,644,262
10.07 Allocated Contingency	$3,646,090	$0	$0	$0	$0	$0
30 - SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	**$2,265,200**	**$10,046,714**	**$162,576**	**$7,466,426**	**$2,580,287**	**$10,046,714**
30.03 Heavy Maintenance Facility	$1,344,000	$9,846,714	$162,576	$7,466,426	$2,380,287	$9,846,714
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**	**$438,895,518**	**$47,103,385**	**$339,069,110**	**$99,826,408**	**$438,895,518**
40.01 Demolition, Clearing, Earthwork	$3,077,685	$10,748,067	$316,555	$9,425,914	$1,322,153	$10,748,067
40.02 Site Utilities, Utility Relocation	$62,192,517	$103,275,822	$4,310,554	$153,731,157	($50,455,336)	$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	$164,766	$11,453,082	$589,111	$12,042,192
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks	$32,579,208	$20,989,303	$1,692,650	$4,394,945	$16,594,358	$20,989,303
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	$1,750	$605,000	$2,130,000	$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	$264,435,606	$40,617,109	$159,459,012	$104,976,594	$264,435,606
40.08 Allocated Contingency	$20,160,000	$22,298,763	$0	$0	$22,298,763	$22,298,763
50 - SYSTEMS	**$504,445,419**	**$679,821,865**	**$45,826,714**	**$454,572,843**	**$225,249,022**	**$679,821,865**
50.01 Train control and signals	$97,589,149	$112,460,517	$17,414,503	$89,242,133	$23,218,384	$112,460,517
50.01 Allocated Contingency	$1,651,000	$4,950,000	$0	$0	$4,950,000	$4,950,000
50.02 Traffic signals and crossing protection	$23,879,905	$79,475,273	$9,741,205	$9,741,205	$69,734,069	$79,475,273
50.02 Allocated Contingency	$1,140,000	$500,000	$0	$0	$500,000	$500,000
50.03 Traction power supply: substations	$69,120,009	$127,642,222	$11,390,050	$107,025,674	$20,616,548	$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	$336,585,173	$6,956,406	$247,622,710	$88,962,463	$336,585,173
50.04 Allocated Contingency	$18,064,000	$6,350,000	$0	$0	$6,350,000	$6,350,000
50.05 Communications	$5,455,000	$5,547,000	$324,550	$941,121	$4,605,879	$5,547,000
50.05 Allocated Contingency		$3,150,000	$0	$0	$3,150,000	$3,150,000
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**	**$44,475**	**$21,978,338**	**$11,366,244**	**$33,344,582**
60.01 Purchase or lease of real estate	$25,927,074	$33,160,590	$44,475	$21,844,346	$11,316,244	$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**	**$694,286,192**	**$5,464,881**	**$319,714,527**	**$374,571,665**	**$694,286,192**
70.03 Commuter Rail	$589,167,291	$642,183,381	$5,464,881	$312,432,568	$329,750,813	$642,183,381
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		$379,335	$0	$0	$379,335	$379,335
70.07 Spare parts	$18,763,931	$18,928,931	$0	$6,743,679	$12,185,252	$18,928,931
80 - PROFESSIONAL SERVICES (applies to Cats. 10-50)	**$323,793,010**	**$464,899,724**	**$3,324,371**	**$381,675,635**	**$83,224,089**	**$464,899,724**
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	$241,386,730	($1,398,030)	$230,578,899	$10,807,831	$241,386,730
80.02 Allocated Contingency	$1,866,000	$500,000	$0	$0	$500,000	$500,000
80.03 Project Management for Design and Construction	$72,029,265	$151,617,659	$4,084,820	$108,053,314	$43,564,345	$151,617,659
80.03 Allocated Contingency	$9,388,080	$0	$0	$0	$0	$0
80.04 Construction Administration & Management	$23,677,949	$50,737,213	$583,120	$31,636,091	$19,101,122	$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	$4,581,851	$2,000,000	$6,581,851
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	$7,167,275	$10,183,908	$54,461	$6,481,757	$3,702,150	$10,183,908
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**	**$2,355,325,952**	**$101,926,402**	**$1,550,703,585**	**$804,622,366**	**$2,355,325,952**
90 - UNALLOCATED CONTINGENCY	**$162,620,295**	**$27,884,507**	**$0**	**$0**	**$27,884,507**	**$27,884,507**
Subtotal (10 - 90)	**$1,923,672,296**	**$2,383,210,459**	**$101,926,402**	**$1,550,703,585**	**$832,506,873**	**$2,383,210,459**
100 - FINANCE CHARGES	**$6,998,638**	**$9,898,638**	**$17,550**	**$7,850,977**	**$2,047,661**	**$9,898,638**
Total Project Cost (10 - 100)	**$1,930,670,934**	**$2,393,109,097**	**$101,943,951**	**$1,558,554,562**	**$834,554,534**	**$2,393,109,097**

[1] Totals may not add due to rounding.
[2] Caltrain Capital Overhead includes actuals to date using new Internal Cost Allocation Plan (ICAP) method as reported in Budget Scrub.

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 February 28, 2022 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*	*$62.1*	*56.21%*
Unallocated	$162.6	*$27.9*	*$27.9*	
TOTAL	**$315.5**	***$90.0***	***90.0***	***100%***

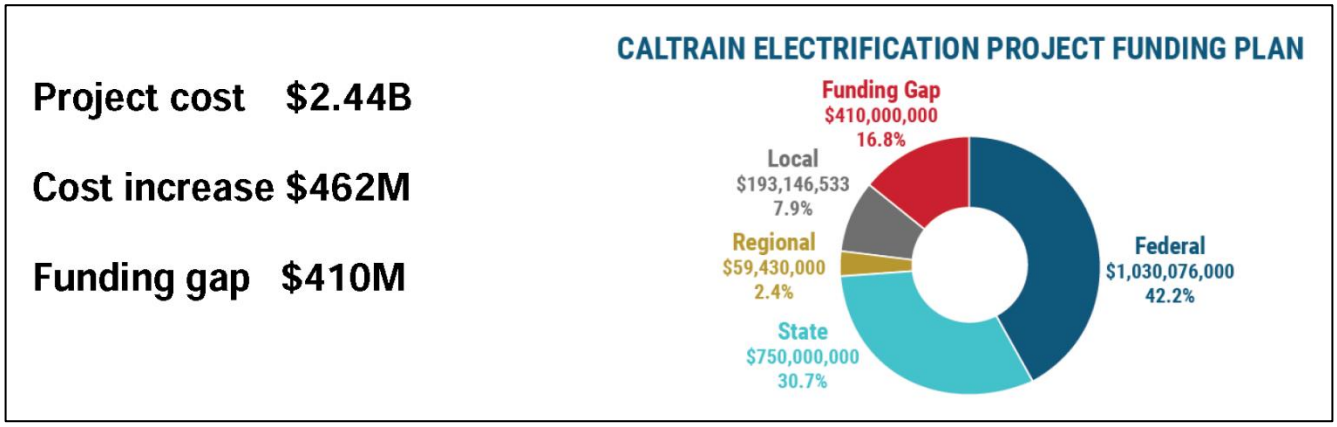
[1] Totals may not add due to rounding.
[2] Estimate at Completion
[3] Data as of February 28, 2022.

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

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 beyond the original funding plan described below which applies to the original project cost of $1.930.7 billion. *Figure 1 below is a recent version of the proposed funding strategy presented to the JPB in March 2022.*

Figure 1 – PCEP Proposed Funding Strategy to Support Budget Increase



The JPB reports that it has formed a special task force to focus on pursuing federal and local grants to close the funding gap. The proposed funding strategy is incomplete at this time and additional details are expected by the time the funding plan is presented to the FTA in the Recovery Plan and to the CHSRA in its Remediation Plan. *The following are updates related to the proposed funding strategy above.*

JPB Bonds Backed by Measure RR Revenues

The Measure RR secured revenue bond issue received bond ratings of AA+ from Standard & Poor's and AAA from Kroll Bond Rating Service. The credit ratings are reflective of the high degree of security provided by the sales tax, and also in the case of Standard & Poor's, reflect some degree of risk provided by the operations of the railroad. The Measure RR bonds were priced on February 15, 2022. Net proceeds for the project are approximately $150.464 million. The bond issue closed and funded on March 2, 2022.

Potential California State Legislative Funding

AB 2197 (Mullin) – Caltrain Electrification Funding. This bill would take $260 million from the state's General Fund to the California State Transportation Agency for the purpose of closing the funding gap for the Caltrain Electrification Project.

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 $1,267,863 as of December 31, 2021, or 66% of the combined federal and local funds.

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 activity this period.

EMU Contract Changes: *One Change Order (CO) for $49,300 for the Interim Buy America Audit and one no-cost CO for a schedule adjustment and milestone payment adjustment.*

SCADA Contract: *No activity this period.*

Tunnel Contract Changes: *Global settlement of $4,500,000 achieved. Changes covered: OCS drop tubes; OCS signage inside the tunnels; Theft of Contact Wire; Protection Delays; Interest Penalties for Delayed Payments; and Extended General Conditions.*

CEMOF Contract Changes: *Global settlement of $2,000,000 achieved. Changes covered: Time related overhead; North Pit Settlement; Cracking of grout pad; Miscellaneous changes related to the Parts Storage Warehouse; and all remaining miscellaneous Potential Change Orders.*

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 has proposed an FFGA RCD of December 31, 2024 in its Recovery Plan dated April 1, 2022.*

The JPB updates its Master Project Schedule (MPS) monthly. *The most recent version is the February 28, 2022 update with a status date of March 1, 2022 and is referred to as MPS C22.02.*

The PCEP team has recently produced an Integrated Master Schedule as recommended by the PMOC. The schedule is still under development and a more refined version is expected to be ready for review shortly after QPRM #20. Attachment G - Project Milestones / Key Events shows the current projected dates for completion of various significant project activities.

The PCEP team received, reviewed and approved BBII's re-baselined schedule for the remaining Electrification contract work as part of the Global Settlement process. The PMOC received a copy of an updated P6 schedule titled "PCEP July 2021 RB Schedule Rev 1 (11.23.21)" on December 1, 2021. The transmittal indicates that the file is for the approved revised baseline schedule for the global settlement. The PCEP team states that the July 2021 version of the BBII schedule was used for re-baselining because that was the version that had been most closely examined by the parties during their negotiation of the signals and other related activities. The JPB has accepted with comments BBII's November and December 2021 schedule updates; the January 2022 schedule update is currently under review.

The PCEP team has also received and reviewed a re-baselined schedule from Stadler for the completion of the EMU order. *Stadler's re-baselined schedule is being converted into P6 format for incorporation into the recently developed Integrated Project Schedule.* JPB is currently forecasting commencement of Revenue Service with its new EMUs between April 1 and July 1, 2024.

Recent Significant Schedule Changes

The following are examples of the significant schedule changes mentioned in the JPB's February 28, 2022 MPS update.

Electrification

Segment 4 Infrastructure & Testing Construction Completion date has slipped 33 calendar days due to PG&E power availability to TPS-2.

Segment 4 integrated testing has 50 calendar days schedule slippage due to contractor delay in completing necessary work.

Stadler

The February 2022 progress schedule update incorporated Stadler's proposed revised baseline schedule. The new 14th trainset conditional acceptance is now Sept 4, 2023.

SCADA

The functionality issues in the communication lines to the field have caused a 40-day schedule slippage; however, it did not impact final acceptance.

The SCADA onsite and system acceptance testing portion of the contract is being re-negotiated to support the revised revenue service date.

ProVen – CEMOF

Schedule delay in substantial completion due to long lead procurement item on the punch list. The new forecast substantial completion date is May 7, 2022.

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 critical path of the project currently runs through the design, installation, and integrated testing of the signal system.

Schedule Contingency Status

The JPB currently forecasts achieving full revenue service by April 1, 2024; this forecast provides 274 days of schedule contingency prior to the newly 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.

Revenue Service Date

The JPB is currently forecasting commencement of revenue service with 14 new EMUs between April 1 and July 1, 2024.

- **PMOC Observations:**

  - *The PMOC is pleased that the PCEP team has increased scheduling resources and has produced an integrated master schedule (IMS). The PMOC has provided some initial comments on the IMS and will work closely with the PCEP scheduling team to refine the schedule and to assist in the development of best schedule management practices.* These practices include 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 observes that the renewed emphasis on partnering between owner and contractor to promptly identify problems and collaborate to find and implement fair and effective solutions appears to be producing positive results. The successful accomplishment of Interim Milestone 1 can be a strong demonstration of the teams' ability to work together.

  - The JPB has achieved a global settlement with BBII, its electrification contractor. The settlement includes agreed upon dates for various schedule milestones, as well as incentives for early completion of the work. The PMOC is pleased that the JPB has achieved a settlement of its lengthy dispute with BBII including an accepted schedule. However, the PMOC has not yet reviewed the details of BBII's re-baselined schedule or the PCEP's plan for proactive schedule management to avoid a recurrence of the prior schedule issues. Two years of complex work remain to complete the PCEP.

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 JPB has also created a "Watch List" of possible occurrences such as currency fluctuations or labor shortages to better understand the PCEP's risk position. The Top Risks, with risk number, are shown in Attachment D. **PMOC Note:** Risks graded 12 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.

The following are other current risk related activities:

- The global settlement with BBII included the identification of a shared risk pool of 25 specific items plus contingency and one small unidentified item for a total of $50 million. The value of each item is specified. The JPB's risk lead is reviewing these risks and incorporating them as appropriate into the PCEP risk register.
- The Rail Activation risk register and the risks identified by the outside experts during the recent external risk review are being incorporated into the PCEP risk register.

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 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 Recovery Plan to the FTA on April 1, 2022.*

- **PMOC Observation:**
  - The PMOC has suggested that the JPB consider holding its next internal risk refresh in early spring 2022. This would allow time for the global settlement to take effect and the parties to demonstrate their mutual commitments. It would also allow the JPB to gauge the effectiveness of the shared risk pool as a deterrent to change orders. *The PCEP's risk lead stated earlier that the JPB was planning to conduct a risk refresh in the March-April 2022 time period, however, the timing for that activity has slipped and a new date has not been announced.*

2.16 Quality Assurance / Quality Control (QA/QC)

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

Infrastructure Projects

- There is a current focus on quality as a major element of the readiness of Segment 4 for electrified operations. The JPB is conducting punch-list inspections of the various constructed works in Segment 4. In some cases, these inspections have revealed that the work was not yet ready to begin testing, and the contractor is addressing the identified discrepancies.
- Continued review of BBII non-domestic Material Receiving Reports (MRRs) for Buy America compliance including review of the justification and reasoning for purchase of non-domestic items.

EMU Quality

- First Article Inspections (FAIs) continue to be finalized and closed out. The FAIs for the individual cars remain open.

- The JPB's EMU Manager reports that Stadler's quality staff is insufficient to support the intended production rate.
- Discussions are underway with Stadler related to the re-start of supplier audits and a list of planned audits has been provided by Stadler. Audits will resume when the suppliers re-open and travel restrictions are lifted.
    - **PMOC Observations and Recommendations:** *The PMOC supports the increased emphasis on Systems Integration, Testing and Commissioning, and quality management. The PMOC shares the JPB's concern that BBII may noy have adequate resources to satisfy its contractual requirements related to start-up and testing.*
    - The PMOC is continuing to observe the role of the PCEP's quality management team during start-up and testing. The PCEP's new ICO has expressed support for the quality program and its role in testing and start-up and stated that he will be looking for additional resources amongst the JPB's current staff. 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, which has an Acting Director Safety/Security.

A serious accident occurred on the railroad March 10, 2022. A southbound Caltrain passenger train carrying 75 passengers struck a piece of on-track construction equipment that was working on the Electrification project. The driver of the construction vehicle, the Engineer, and two passengers were transported to the hospital. The incident is under investigation by the National Transportation Safety Board (NTSB), the Federal Railroad Administration, Cal/OSHA, and the California Public Utilities Commission (CPUC). The JPB, in response to the incident, immediately imposed a temporary stop work period for all contractors. Off-track work resumed on March 23, 2022 and on-track work resumed on March 28, 2022.

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 monitor public health advisories related to COVID-19 and its new Omicron Variant.

The safety team is currently working on providing training in electrical hazard awareness for the PCEP team and contractors, and through the Fire and Life Safety Committee (FLSC), for first responders in Segment 4, in anticipation of the upcoming electrification of the OCS system in Segment 4. Information is being 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.

The safety performance of BBII, the Electrification contractor, has improved and its Recordable Incident Rate is below industry average.

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 and 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 is in compliance with the requirements of the ADA.

The new EMU vehicles will be equipped with powered on-board lifts to aid passengers using mobility devices. The JPB requested the FTA's concurrence to reduce the number of on-board 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 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) on-board lifts until such time as the EMUs operate in blended service with the CHSRA trains. The justification for this request is that the space occupied by the on-board 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 has completed design of the barrier, a Change Order has been executed for installation of the barriers, and installation is underway. 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.

2.19 Buy America

The JPB provided documentation showing that BBII, the Electrification contractor, is complying with the Buy America Act, and the Action Item related to this issue is closed. The documentation provided by BBII indicates that some foreign materials have been purchased. BBII is of the opinion that this purchase is permitted because the materials are considered sub-components of the traction power system, or if not, compliance is waived because of the small quantities involved. The PMOC has questioned this interpretation and asked the JPB to pursue the matter. The PMOC's Buy America experts have provided additional information and guidance to the JPB's quality team to assist it in its inquiry, and the JPB's leadership has elevated the issue with BBII's management.

The JPB's vehicle consultant conducted a formal Intermediate Buy America audit on October 25-27, 2021 and the PMOC had several opportunities to audit progress during the audit. The audit report is complete and has been reviewed by the PMOC. The auditor was unable to verify the domestic content of the vehicles because Stadler did not provide the commercial information necessary to perform that analysis. The auditor provided several recommendations that should be followed to clearly demonstrate that the vehicles meet Buy America requirements. The PMOC has submitted a draft report describing the results of this review and recommendations for further action to the FTA.

2.20 Start-Up, Commissioning, Testing

The JPB and PCEP team have several activities focused on 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 team did an extended briefing of the FTA and PMOC on its testing and commissioning activities as part of the PMOC's February Virtual Monitoring meetings.

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

- BBII continues to conduct tests on the completed elements of the OCS, TPS, and Communication systems in Segment 4 in preparation for achieving Interim Milestone 1 which is now scheduled for spring 2022. The signal equipment in Segment 4 was installed and tested in accordance with FRA regulations, as each location was cutover and placed back in operation.
- BBII continues with preparation of test plans and schedules for its work elements, Operations and Maintenance (O&M) manuals, and is participating in the project-wide Systems Integration, Safety and Security Certification Committee, Testing and Commissioning, and Rail Activation meetings.
- BBII has a sub-contracted Safety Certification consultant who is assisting with completion of the required documentation.

EMU Contract

- *Stadler shipped its first two trainsets (TS-3 and TS-4) to the JPB on March 18, 2022 and the vehicles arrived on March 20, 2022. The trainsets were shipped as part of a dedicated special train and arrived without damage.* Stadler's crew will make the trains ready for testing and conduct a series of tests. Approximately one and one-half months is required before the first train will be available for powered testing of Segment 4.
- The FRA conducted a Sample Car Inspection on TS-3 on February 16, 2022 at Stadler's Salt Lake City facility; a small number of minor deficiencies were identified, and all but one was corrected on the day of the inspection.
- Stadler is participating in the project-wide Systems Integration and Safety and Security Certification Committee meetings.

SCADA Contract

- ARINC is finalizing its Operations and Maintenance manuals and training plans for submission to the JPB. A "train the trainer" activity was scheduled for early October 2021, but was postponed when ARINC reported a Covid outbreak among its staff.

Readiness for Electrified Rail Operations

The PCEP's Rail Activation Committee (RAC) meets bi-weekly. The RAC is currently chaired by Sal Gilardi, one of the two principals of the safety contractor, until a permanent chair is named. *The JPB reports that it will be interviewing a candidate to be the Rail Activation Manager the week of April 4, 2022.* The RAC includes representatives from the PCEP's technical consultants and the JPB's Rail Operations group. *The Rail Activation Schedule developed by the RAC was recently integrated with other project schedules such as Testing and Commissioning and Systems Integration to form a fully integrated MPS.*

- **PMOC Observations:** There appears to be a lack of sufficient resources on the contractor's team to produce all of the required documentation in a timely manner. The Electrification contractor recently brought in additional resources from the United Kingdom to assist with this effort. *The additional resources appear to be improving production of the required documents.*
- The PMOC is conducting a modified Readiness for Service Review related to 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 has observed that the overall coordination is improving under the PCEP's new leadership and following the conclusion of the global settlement between the parties.
- Unexpected issues continue to arise as the contractors and the PCEP team move closer to Interim Milestone 1. The lack of a mechanically integrated schedule with full details of each party's responsibilities for testing and commissioning activities hampers early identification and mitigation of these issues. *The JPB reports that it has produced a fully integrated MPS and that the document is currently under management review.*

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.

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/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
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
EA	Environmental Assessment
EAC	Estimate at Completion

Acronyms	List of Terms
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
Cal ISO	California Independent System Operator
ITCS	Incremental Train Control System
JPB or PCJPB	Peninsula Corridor Joint Powers Board
Jacobs	Jacobs Project Management Company
KKCS	Kal Krishnan Consulting Services, Inc.
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)
NTP	Notice to Proceed
NTSB	*National Transportation Safety Board*
OCS	Overhead Contact System/Overhead Catenary System
PAP	Palo Alto Power

Acronyms	List of Terms
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
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
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
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

Acronyms	List of Terms
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
TTCI	Transportation Technology Center, Inc.
TVA	Threat and Vulnerability Analysis
TVM	Transit Vehicle Manufacturer
UPRR	Union Pacific Railroad
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. 19 was held January 25, 2022
Has the project sponsor submitted its safety certification plan to the oversight agency?	Y	SSCP submitted Rev. 0 which is currently under review.
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; Transit Police is the liaison between DHS and Caltrain.

Safety and Security Checklist		
Area of Focus	**Y/N**	**Notes/Status**
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.
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	

Safety and Security Checklist		
Area of Focus	**Y/N**	**Notes/Status**
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 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 final safety and security certification?	N	Project is in construction. Required Completion Date is 9-26-2024.
Has the project sponsor issued the final safety and security verification report?	N	Project is in construction. Required Completion Date is 9-26-2024.
Construction Safety		
Does the project sponsor have a documented/implemented Contractor Safety Program with which it expects to comply?	Y	The Design/Build contractors "Construction Safety Program" and "Health and Safety Plan" have been accepted.
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?		The overall Reportable Incident Rate for the project from 2017 through March of 2022 is at 1.70. There have been a total of 2,592, 842 hours reported with 22 reportable incidents for a 1.70 RIR.
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.

Safety and Security Checklist		
Area of Focus	**Y/N**	**Notes/Status**
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 has been completed and 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	FRA representatives attended QPRM No. 19 on January 25, 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.	The FRA suggested a new strategy to satisfy its requirements related to implementation of the 2SC solution.	This item to be closed following FRA approval of the RFA related to implementation of the 2SC solution. *Submission of the RFA will follow the Segment 2 Phase 3 and 4 cutovers. That work was delayed due to the recent incident and is now scheduled to begin May 2, 2022.*	Shrestha/Cocke	A draft of the RFA has been submitted to FRA. FRA has requested that test results from the Center Street crossing be included for review. JPB expects the process to conclude by July 2022.

Attachment D Top Project Risks

There were no changes in the ranking of the top risks since the previous report. Changes from the prior report are indicated by italics.

Risk No.	Risk Category		Risk Description	Status
	Cost	Sched.		
241	X	X	Segment 4 may not be fully installed or tested prior to EMU delivery on-site.	Ability to complete testing of Segment 4 depends on PG&E's energization of TPSS-2, which is delayed by lack of completed test documents.
267	X	X	Additional property acquisition is necessitated by change in design.	Sponsor meets regularly with contractor and design team to pursue alternatives that would avoid new ROW acquisition.
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.
333	X	X	Remediation of issues associated with the CEMOF pit may result in additional costs and additional time to issue the charge order and implement the work.	Remediation of the pit is complete, and a settlement has been reached with ProVen related to the CEMOF contract.
303	X	X	Extent of differing site conditions and delays in resolving differing site conditions delays completion of electrification increases program costs.	All OCS foundations are complete. One TPS foundation remains to be completed. Numerous signal foundations and related trenching work remains.
318	X	X	Change of vehicle sub-suppliers results in additional first article inspections at cost to JPB (i.e., COVID, bankruptcy).	The JPB is using its on-site inspector where possible to conduct FAIs. Stadler has not identified additional concerns.
Top six (6) risks as shown on Risk Register dated 3-11-2022				

Attachment E Awarded Contracts

The current list of contracts numbers over *173.* Eighty (80) contracts have values over $50,000, and sixty-eight (68) 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 January 30, 2022.*

Contractor Name	Current Value
BALFOUR BEATTY INFRASTRUCTURE, INC	$ 1,097,149,881
STADLER US INC	$ 555,309,917
PACIFIC GAS & ELECTRIC COMPANY - SA scopes	$ 124,106,400
TRANSITAMERICA SERVICES, INC. - Other scopes	$ 81,721,874
GANNETT FLEMING TRANSIT & RAIL SYSTEMS	$ 67,743,400
PROVEN MANAGEMENT, INC. - Tunnel scope	$ 42,483,535
LTK CONSULTING SERVICES, INC.	$ 36,845,000
URS CORPORATION	$ 36,361,332
JACOBS PROJECT MANAGEMENT CO.	$ 35,500,000
JPMORGAN CHASE BANK, N.A.	$ 8,853,865
RAIL SURVEYORS AND ENGINEERS, INC.	$ 7,509,348
PROVEN MANAGEMENT, INC. - CEMOF scope	$ 7,447,599
B & G TRANSPORTATION GROUP, LLC	$ 6,949,280
ICF JONES & STOKES, INC.	$ 4,927,957
NC 2121 SEC VENTURES LLC	$ 4,394,220
FIRST AMERICAN TITLE COMPANY	$ 4,290,819
ARINC INCORPORATED	$ 4,187,731
HNTB CORPORATION	$ 3,976,130
RREF III-P TOWER PLAZA LLC	$ 3,868,440
STATE OF CALIFORNIA	$ 3,629,200
DCONSULT, LLC.	$ 2,542,143
SHIMMICK/DISNEY JOINT VENTURE	$ 2,400,000
PRICE FORBES & PARTNERS, LTD	$ 2,125,000
NORMAN E. MATTEONI ATTORNEY BAR TRUST	$ 2,016,000
PROVEN MANAGEMENT, INC. - SSF scope	$ 1,866,575
ASSOCIATED RIGHT OF WAY	$ 1,599,586
BENDER ROSETHAL, INC.	$ 1,547,915
WELLS FARGO INSURANCE SERVICES USA, INC	$ 1,493,269
TRANSITAMERICA SERVICES, INC. - Santa clara drill track	$ 1,186,015
COMPUCOM SYSTEMS, INC.	$ 1,108,837

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:** 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; 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)*
- 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:** Domestic content was reported to vary from 69.40% to 81.54% for the four (4) different car type variants as of October 2021.
- 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: TBD early 2022
- Post-Deliver Audit Report Date: TBD

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 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	1/31/2023 (P)	
Systems Integration Testing Completed:	01/2019	4/1/2024 (P)	
Segment 4 Complete to Begin EMU Testing:	11/2019	6/13/2022 (P)	
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:		7/1/2022 (P)	
PG&E Provides Permanent Power:	09/2021	8/13/2022 (P)	
Pre-Revenue Operation Completed:	05/2020	03/31/2024 (P)	
Revenue Service Date (without Risk Contingency):	12/2021	04/1/2024 (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 has 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 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. Completion of work in Segment 4 is designated as Interim Milestone 1 in the BBII Electrification Design-Build contract. Following electrification of Segment 4 and the test track, local testing of the EMU vehicles will commence following their delivery to the JPB. *The first two EMU trainsets arrived at the JPB's CEMOF on March 20, 2022 and are currently being prepared for inspection and static testing. Segment 4 is not yet electrified.*

The second stage of electrification will include completion of remaining Segments 1, 2 and 3, 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 recently accepted the PMOC's recommended RCD of September 26, 2024, which is based on the results of the December 2020 Risk Refresh. The JPB is currently forecasting commencement of Revenue service with its new EMUs between April 1 and July 1, 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 currently chaired by Sal Gilardi, one of the two principals of the PCEP's safety contractor. 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.

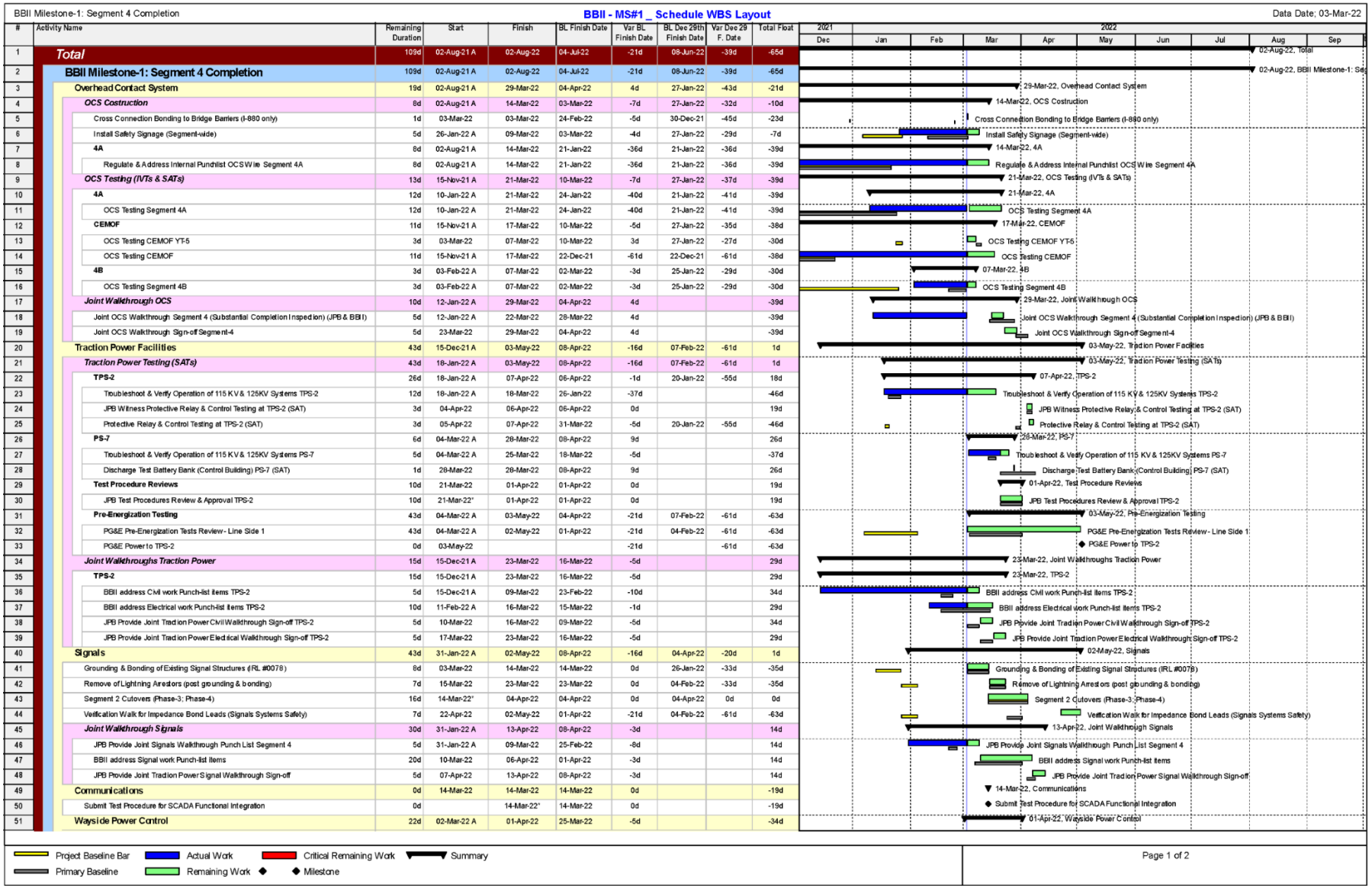
The JPB held a Testing and Commissioning Workshop on December 14, 2021 for all of the electrification and related contractors. The objective of the workshop was to assess the readiness of the project to achieve Interim Milestone 1, Segment 4 Ready for EMU Testing. The workshop was generally regarded as beneficial by the PCEP team.

The RAC meets on a bi-weekly basis to review assigned action items, upcoming activities, and the current schedule; the most recent meeting was held March 31, 2022.

The RAC recently completed a revised and updated Rail Activation Plan with new material focused on the initial electrification of Segment 4. The PMOC received an advance copy of the updated plan for use in its modified OP 54 Readiness for Service Review.

The RAC continues to maintain its Rail Activation Risk Register which has a total of 34 risks. The RAC Risk Register includes 22 active risks, of these, ten (10) are currently reflected in the PCEP Risk Register. *The PCEP risk lead has completed incorporating the Rail Activation risks into a consolidated risk register for the PCEP. The RAC was also maintaining a Rail Activation Schedule which was updated regularly; however, that schedule has been incorporated into and integrated with the Master Project Schedule.* 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. *The schedule is updated at least biweekly. A copy of the most recent Segment 4 Testing and Commissioning schedule is shown in Figure H-1; the schedule update did not occur as planned due to the March 10, 2022 incident.*

Figure H-1 Segment 4 Testing and Commissioning Schedule

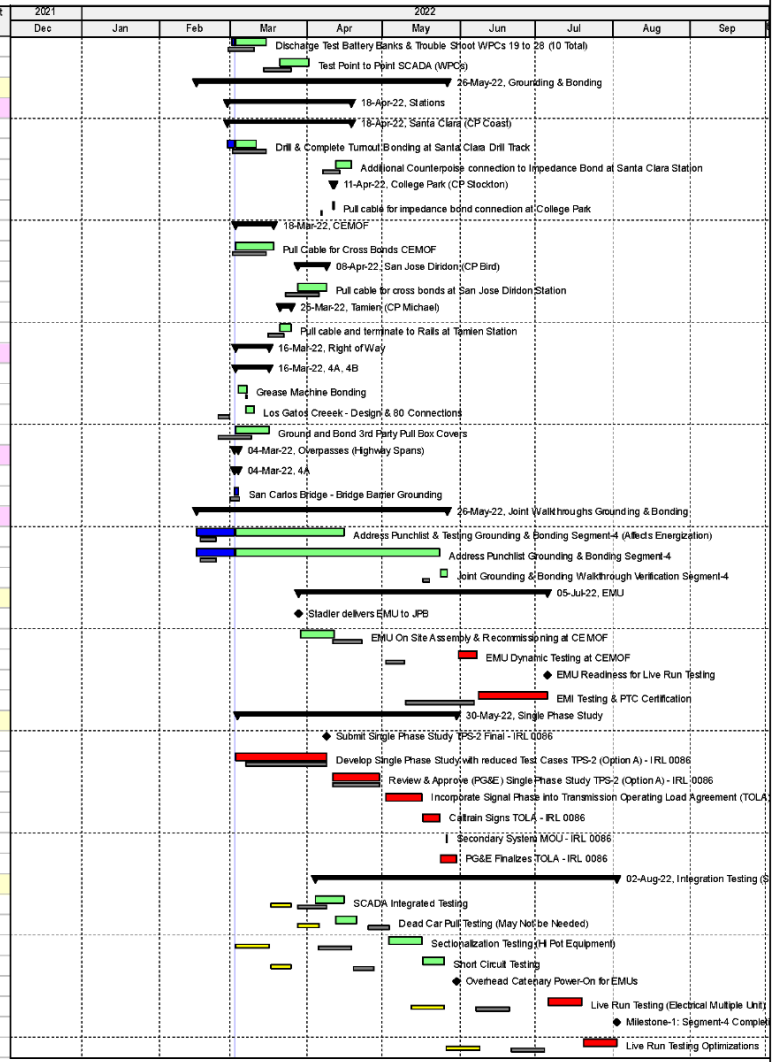


BBII Milestone-1: Segment 4 Completion

BBII - MS#1 _ Schedule WBS Layout

Data Date; 03-Mar-22

#	Activity Name	Remaining Duration	Start	Finish	BL Finish Date	Var BL Finish Date	BL Dec 29th Finish Date	Var Dec 29 F. Date	Total Float
52	Discharge Test Battery Banks & Trouble Shoot WPCs 19 to 28 (10 Total)	9d	02-Mar-22 A	15-Mar-22	10-Mar-22	-3d			-31d
53	Test Point to Point SCADA (WPCs)	10d	21-Mar-22	01-Apr-22	25-Mar-22	-5d			-34d
54	**Grounding & Bonding**	61d	16-Feb-22 A	26-May-22	19-May-22	-5d			-17d
55	***Stations***	33d	28-Feb-22 A	18-Apr-22	13-Apr-22	-3d			-35d
56	**Santa Clara (CP Coast)**	33d	28-Feb-22 A	18-Apr-22	13-Apr-22	-3d			-35d
57	Drill & Complete Turnout Bonding at Santa Clara Drill Track	7d	28-Feb-22 A	11-Mar-22	15-Mar-22	2d			-28d
58	Additional Counterpoise connection to Impedance Bond at Santa Clara Station	5d	12-Apr-22	18-Apr-22	13-Apr-22	-3d			-35d
59	**College Park (CP Stockton)**	1d	11-Apr-22	11-Apr-22	06-Apr-22	-3d			-35d
60	Pull cable for impedance bond connection at College Park	1d	11-Apr-22	11-Apr-22	06-Apr-22	-3d			-35d
61	**CEMOF**	12d	03-Mar-22 A	18-Mar-22	15-Mar-22	-3d			-35d
62	Pull Cable for Cross Bonds CEMOF	12d	03-Mar-22 A	18-Mar-22	15-Mar-22	-3d			-35d
63	**San Jose Diridon (CP Bird)**	10d	28-Mar-22	08-Apr-22	05-Apr-22	-3d			-35d
64	Pull cable for cross bonds at San Jose Diridon Station	10d	28-Mar-22	08-Apr-22	05-Apr-22	-3d			-35d
65	**Tamien (CP Michael)**	5d	21-Mar-22	25-Mar-22	22-Mar-22	-3d			-35d
66	Pull cable and terminate to Rails at Tamien Station	5d	21-Mar-22	25-Mar-22	22-Mar-22	-3d			-35d
67	***Right of Way***	10d	03-Mar-22	16-Mar-22	09-Mar-22	-5d			-30d
68	**4A, 4B**	10d	03-Mar-22	16-Mar-22	09-Mar-22	-5d			-30d
69	Grease Machine Bonding	2d	04-Mar-22	07-Mar-22	07-Mar-22	0d			-23d
70	Los Gatos Creeek - Design & 80 Connections	4d	07-Mar-22*	10-Mar-22	28-Feb-22	-8d			-26d
71	Ground and Bond 3rd Party Pull Box Covers	10d	03-Mar-22	16-Mar-22	09-Mar-22	-5d			-30d
72	***Overpasses (Highway Spans)***	0d	03-Mar-22 A	04-Mar-22	04-Mar-22	1d			-23d
73	**4A**	0d	03-Mar-22 A	04-Mar-22	04-Mar-22	1d			-23d
74	San Carlos Bridge - Bridge Barrier Grounding	0d	03-Mar-22 A	04-Mar-22	04-Mar-22	1d			-23d
75	***Joint Walkthroughs Grounding & Bonding***	61d	16-Feb-22 A	26-May-22	19-May-22	-5d			-17d
76	Address Punchlist & Testing Grounding & Bonding Segment-4 (Affects Energization)	32d	16-Feb-22 A	15-Apr-22	23-Feb-22	-37d			-52d
77	Address Punchlist Grounding & Bonding Segment-4	58d	16-Feb-22 A	23-May-22	23-Feb-22	-63d			-17d
78	Joint Grounding & Bonding Walkthrough Verification Segment-4	3d	24-May-22	26-May-22	19-May-22	-5d			-17d
79	**EMU**	71d	28-Mar-22	05-Jul-22	06-Jun-22	-21d	12-May-22	-39d	-65d
80	Stadler delivers EMU to JPB	0d		28-Mar-22*	08-Apr-22	9d			-55d
81	EMU On Site Assembly & Recommissioning at CEMOF	10d	29-Mar-22	11-Apr-22	22-Apr-22	9d			-55d
82	EMU Dynamic Testing at CEMOF	6d	31-May-22	07-Jun-22	09-May-22	-21d			-65d
83	EMU Readiness for Live Run Testing	0d		05-Jul-22	06-Jun-22	-21d	12-May-22	-39d	-65d
84	EMI Testing & PTC Certification	20d	08-Jun-22	05-Jul-22	06-Jun-22	-21d			-65d
85	**Single Phase Study**	63d	04-Mar-22 A	30-May-22	29-Apr-22	-21d	31-Jan-22	-85d	-65d
86	Submit Single Phase Study TPS-2 Final - IRL 0086	0d		08-Apr-22	08-Apr-22	0d	31-Jan-22	-49d	-65d
87	Develop Single Phase Study with reduced Test Cases TPS-2 (Option A) - IRL 0086	27d	04-Mar-22 A	08-Apr-22	08-Apr-22	0d			-65d
88	Review & Approve (PG&E) Single Phase Study TPS-2 (Option A) - IRL 0086	15d	11-Apr-22	29-Apr-22	29-Apr-22	0d			-65d
89	Incorporate Signal Phase into Transmission Operating Load Agreement (TOLA) - IRL 008	11d	02-May-22	16-May-22					-65d
90	Caltrain Signs TOLA - IRL 0086	5d	17-May-22	23-May-22					-65d
91	Secondary System MOU - IRL 0086	1d	26-May-22	26-May-22					-63d
92	PG&E Finalizes TOLA - IRL 0086	5d	24-May-22	30-May-22					-65d
93	**Integration Testing (SITs)**	87d	04-Apr-22	02-Aug-22	04-Jul-22	-21d	08-Jun-22	-39d	-65d
94	SCADA Integrated Testing	10d	04-Apr-22*	15-Apr-22	08-Apr-22	-5d	25-Mar-22	-15d	-34d
95	Dead Car Pull Testing (May Not be Needed)	7d	12-Apr-22	20-Apr-22	03-May-22	9d	05-Apr-22	-11d	-55d
96	Sectionalization Testing (Hi Pot Equipment)	10d	03-May-22	16-May-22	18-Apr-22	-20d	16-Mar-22	-43d	-63d
97	Short Circuit Testing	7d	17-May-22	25-May-22	27-Apr-22	-20d	25-Mar-22	-43d	-63d
98	Overhead Catenary Power-On for EMUs	0d		30-May-22	29-Apr-22	-21d			-65d
99	Live Run Testing (Electrical Multiple Unit)	10d	06-Jul-22	19-Jul-22	20-Jun-22	-21d	25-May-22	-39d	-65d
100	Milestone-1: Segment-4 Completion to JPB	0d		02-Aug-22*	04-Jul-22	-21d	08-Jun-22	-39d	-65d
101	Live Run Testing Optimizations	10d	20-Jul-22	02-Aug-22	04-Jul-22	-21d	08-Jun-22	-39d	-65d

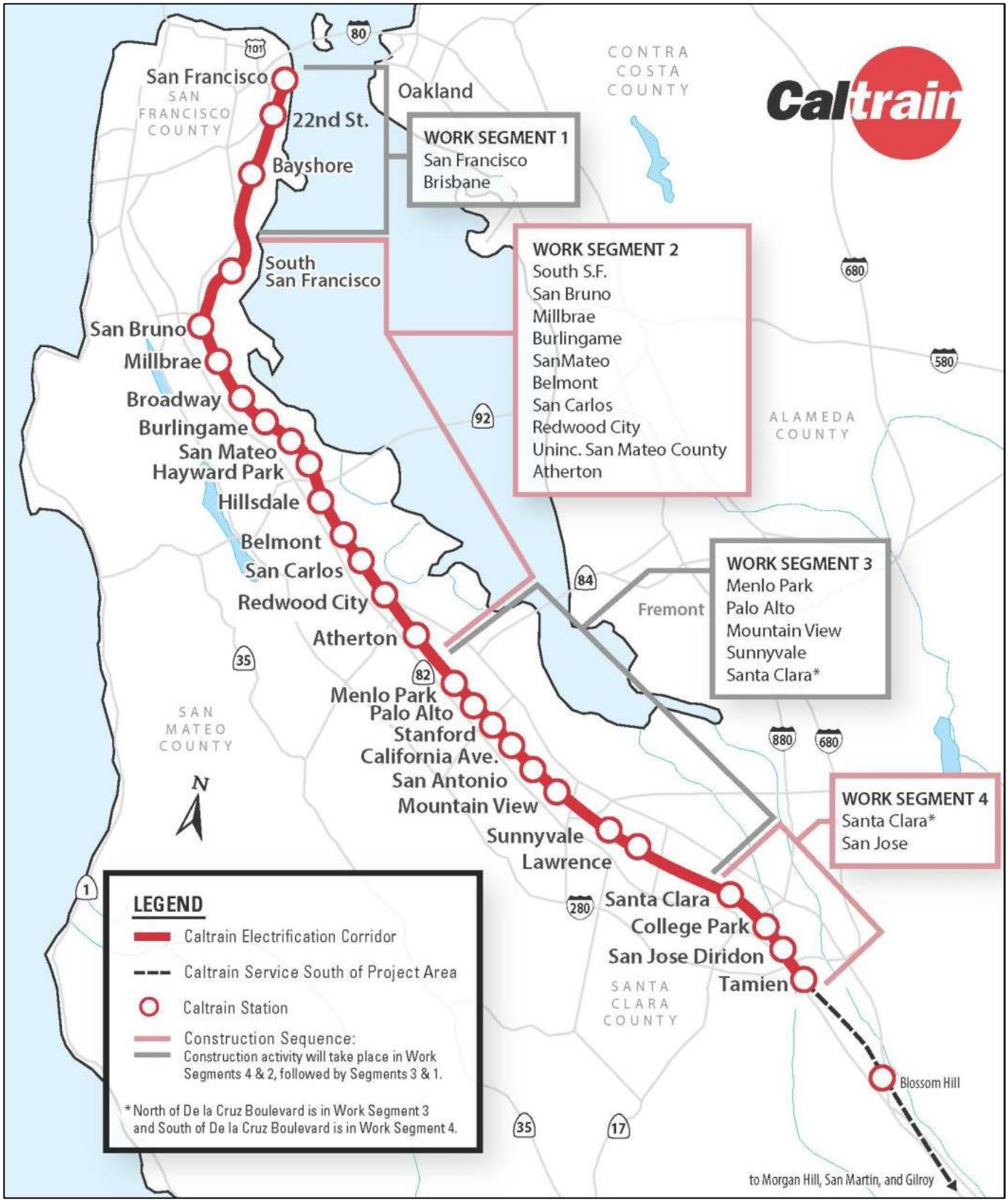


Project Baseline Bar | Actual Work | Critical Remaining Work | Summary

Primary Baseline | Remaining Work | Milestone

Page 2 of 2

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' 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 **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.