Project Monitoring Report (PMR)
September 2020

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

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

Submitted: November 3, 2020

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

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

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Length of Time Firm Assigned to Project: 5 Years, 3 Months
Length of Time Person Assigned to Project: 5 Years, 3 Months

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1.0 Executive Summary

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

1.1 Project Description

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

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 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 in the Federal Railroad Administration's (FRA's) Extended Revenue Service Demonstration (RSD) phase prior to final approval by the FRA.*

1.2 Project Status

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

- Scope – The scope remains as planned.
- Schedule – The current forecasted final completion date (FCD) is August 22, 2022.
- Cost – The current forecasted project cost is $1.930 billion in year of expenditure (YOE) dollars.
- Significant Project Activities and/or Key Milestones
    - The first major milestone in the Electrification contract is the completion of Segment 4; this milestone is currently forecast to occur on June 30, 2021.
    - The first EMU trainset (TS-1) has been assembled and is undergoing initial testing and troubleshooting at Stadler's assembly facility in Salt Lake City, Utah. Following the completion of initial testing, TS-1 will be shipped to the Association of American Railroads' (AAR) Transportation Technology Center, Inc. (TTCI) in Pueblo, Colorado for prescribed acceptance and qualification tests. TS-1 has been assembled as an eight (8) car trainset for testing purposes but will be re-assembled and delivered to the JPB as a seven (7) car trainset following the completion of tests at the TTCI.

1.3 Major Issues and/or Concerns

Summary of Issue/Concern	Electrification Design-Build Contractor Claims
Date Identified	June 2019
Status	The Electrification contractor has submitted a total of four (4) claims; the most significant claim is associated with its efforts to provide Consistent Warning Time (CWT) at grade crossings. Other claims include denial of a Design Variance Request for alternate feeder and contact wire; percent of payment for CWT under Allowance Item #10; and costs for an alternate designer for Segment 1A.
Project Sponsor Action	The JPB and the Electrification contractor have been engaged in a technically facilitated mediation process since October 2019 to resolve these issues. *The mediator put forth a proposal in mid-June 2020 resulting in several meetings both with the mediator and between the parties. A meeting that included the two (2) project principals and the two (2) main signal subcontractors occurred on July 17, 2020. The parties are in relative agreement on direct costs, but far apart on time impacts. A follow-on schedule workshop was held on July 28, 2020. The parties continue to meet, and discussions with the signal contractors have been helpful. The next call is scheduled for September 28, 2020.*
PMOC Recommendation	*Continue the process with a focus on improving field production.*

Summary of Issue/Concern	Unresolved Schedule Impacts
Date Identified	*November 2018*
Status	The JPB is evaluating the Electrification contractor's Time Impact Analysis (TIA) for changes to the grade crossing warning system. The TIA and related documents allege a delay of 1,092 days. This delay is independent of delays associated with impacts to OCS foundation construction from differing site conditions; however, the two types of delays are not necessarily additive.
Project Sponsor Action	*The JPB continues to reject the Electrification contractor's schedule updates, including the most recent May 2020 update received August 17, 2020. The JPB was planning to review the May and June updates concurrently; however, the June update has not been delivered as promised. The contractor's May 2020 update continues to project a substantial completion date of April 20, 2024. This date is well beyond the Final Completion Date (FCD) of August 22, 2022 in the Full Funding Grant Agreement (FFGA).*
PMOC Recommendation	*Use contractual tools to encourage BBII's on-time production of required monthly schedule updates.*

Summary of Issue/Concern	Technical Capacity and Capability
Date Identified	*February 2019*
Status	The System Integration Lead is only part-time and needs assistance. Scheduling capacity continues to be insufficient to meet the routine demands of the project. Rail Activation Planning is currently being managed by a member of the safety team with rail activation experience until a permanent Rail Activation Manager is hired.
Project Sponsor Action	*The JPB reports that it is attempting to hire an additional scheduler to assist with delay analysis.* *Rail Operations has engaged an independent consultant to assist it in developing materials for incorporation into the overall Rail Activation Plan (RAP). The PMOC remains uncertain how the overall Rail Activation process is being managed.*

	The Chief Operating Officer, Rail, continues to recruit for a Director of Rail Activation,
PMOC Recommendation	*Develop a coordinated plan for completion of the project led by a single individual.*

Summary of Issue/Concern	OCS Construction Progress
Date Identified	*May 2018*
Status	Overall progress on the OCS foundations and follow-on electrification work is much slower than originally planned. *The PCEP team reports a total of 1,913 foundations completed as of August 18, 2020, or 61% of the total of 3,116 required.*
Project Sponsor Action	The JPB continues to meet weekly with the contractor on the progress of potholing and foundation construction. *Rail operations is providing additional flexibility for track access by the contractor's crews. The PCEP team now expects that all OCS foundation work will be completed by February 2021.*
PMOC Recommendation	*Complete potholing of the remaining foundations as early as possible.*

Summary of Issue/Concern	Consistent Warning Time (CWT) for Grade Crossings
Date Identified	*February 2018*
Status	The Electrification contractor is moving forward with design using a two (2) speed check solution which apparently will satisfy FRA and California Public Utilities Commission (CPUC) requirements.
Project Sponsor Action	*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. Amendment to be submitted after Caltrain's PTCSP is approved and documented test results are available from one or more crossings. Schedule for submittal of the RFA is likely first quarter calendar 2021.*
PMOC Recommendation	Provide recommendations when applicable

Summary of Issue/Concern	Systems Integration and Testing
Date Identified	*February 2018*
Status	A number of complex Systems Integration issues are currently unresolved, including: • The Electrification contractor has submitted a revised cutover plan for four (4) locations in Segment 4; this plan is currently under review by the JPB. • Potential changes to the communications system.
Project Sponsor Action	*The JPB has revised the schedules and participants for several standing meetings that address Systems Integration; Start-up and Testing; Rail Activation Planning; and coordination with Rail Operations. The objective is to reduce the number of meetings and make the remaining meetings more productive.*
PMOC Recommendation	*Implement a coordinated plan for completion of the project led by a single individual.*

1.5 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:	*September 30, 2020*				
Project Detail					
Oversight Frequency:	Quarterly				
Element	**Status**			**Prior Status (G/Y/R)**	**Issue or Concern**
	G	**Y**	**R**		
PMP	●			●	
MCC		●		●	*Continuing need for more Scheduling and Systems Integration support*
Cost		●		●	*Remaining unencumbered cost contingency below drawdown curve*
Schedule			●	●	*Schedule contingency reduced to 31 days; 2 years remain to FCD*
Quality	●			●	
Safety		●		●	*Recurring minor incidents on Electrification contract*
Risk		●		●	*Claim by Electrification contractor, slow OCS progress, COVID EMU Delays*
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.*				

1.6 Core Accountability Items through August 2020

Project Status: In Construction		Original (FFGA)	Current Forecast [1]	PMOC Assessment of Current Forecast
Cost	Cost Estimate	$1,930,670,934	$1,930,670,934	*The JPB's Total Project Cost has Remained Unchanged*
Contingency	Unallocated Contingency	$162,620,294	*$58,135,331*	
	Allocated Contingency	$152,913,317	*$38,270,436*	
	Total Contingency	$315,533,611	*$96,405,768*	*PMOC to Evaluate*
Schedule	Final Completion Date	August 22, 2022	August 22, 2022	*Uncertain*

Project Progress		Amount ($)	Percent of Total
Total Expenditures	Actual cost of all eligible expenditures completed to date [3]	*$966,380,857*	*50.05%*
Planned Value to Date [2]	Estimated value of work planned to date [3]	*$1,102,295,303*	*57.09%*
Actual Value to Date	Actual value of work completed to date [3]	*$741,598,408*	*38.41%*

Contracts Status		Amount ($)	Percent
Total Contracts Awarded	Value of all contracts (design, support, construction, equipment) awarded; % of total value to be awarded [4]	*$1,719,072,331*	*91.40%*
Construction Contracts Awarded	Value of construction contracts awarded; % of total construction value to be awarded [5]	*$1,454,510,277*	*77.34%*
Physical Construction Completed	Value of physical construction (infrastructure) completed; % of total construction value completed	*$699,108,107*	*48.06%*

Rolling Stock Vehicle Status	Date Awarded	No. Ordered	No. Delivered
Electric Multiple Unit (EMU) commuter rail vehicles	08/2016 (A)	133	0

Next Monthly Meeting Date:	*TBD – December 2020*
Next Quarterly Review Meeting Date:	*October 29, 2020*

[1] Current estimate is the remaining balance which includes known change orders that will draw from Contingency funds, both Allocated and Unallocated.

[2] Based upon the Program Schedule and Estimate (Rev. 4B) that were updated in October 2017 to reflect the FFGA delay.

[3] Defined as construction or manufacturing by Balfour Beatty, Stadler, PG&E, CEMOF, Tunnel Mod, and other required projects.

[4] Percentage is calculated based on a project value of $1,930,670,934.

[5] Total construction contracts awarded to date (construction & vehicle contracts only) includes design and executed change orders.

Grant Information

Dollars in thousands reported as of September 30, 2020

FAIN (Source)	Funds Committed*	Funds Disbursed	% Disbursed
Local	$996,521	$513,153	51%
Federal	$934,150	$409,812	44%
Total	**$1,930,671**	$922,965	48%

*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 May 21, 2020 through September 30, 2020. The information contained in this report is based on the PMOC's participation in virtual Quarterly Progress Review Meeting (QPRM) No. 13 held on August 31, 2020, virtual monitoring meetings held on September 24, 2020, 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 project activities through the activities described above and prepare a monitoring report on the project quarterly. The PMOC anticipates the following focus for upcoming activities.

- The PMOC is continuing to focus on the PCEP's schedule performance, including the JPB's mitigation of delays to OCS foundation installation, implementation of the 2SC solution to provide the required warning time at grade crossings, and completion of Time Impact Analysis related to the 2SC issue. *The PMOC participated in the Risk Refresh on April 1, 2020 and has reviewed the results of the JPB's modelling. The PMOC has also discussed the status of PCEP schedules with the PCEP and will focus on identifying an acceptable schedule for use in the FTA's independent risk assessment discussed below.*
- The PMOC is continuing to monitor the JPB's Systems Integration activities and the development of its Rail Activation Plan (RAP). The RAP is moving forward and the PMOC has provided lessons learned from another agency's Rail Activation planning and management process. Rail Operations has engaged an independent consultant to assist it with the assembly and development of materials pertinent to the internal workings of the Rail Operations Division and is contributing these materials to the Rail Activation Plan. Rail Operations continues to recruit for a Director of Rail Activation; however, how the Rail Activation process will be managed and implemented is not yet fully developed.
- *The PMOC plans to conduct an independent Risk Refresh to confirm the likelihood of the project completing within budget and in accordance with the FFGA schedule. The risk assessment workshop is tentatively scheduled for the week of December 14, 2020. The PMOC plans to assemble and review relevant scope, cost, and schedule information to provide a basis of the risk assessment modelling.*

2.2 Oversight Triggers

The PMOC has identified several areas of continuing concern, as noted in the Key Indicators Dashboard. These are not new issues and have been discussed with the Sponsor, the ACOR, and Region IX leadership during monitoring visits and past QPRMs. Schedule uncertainty is of greatest concern for the following reasons:

- *The available schedule contingency has continued to erode and the PCEP's most recent schedule update as of August 31, 2020 shows remaining contingency of 31 days at a time when there is slightly less than two (2) years remaining until the FFGA FCD of August 22, 2022.*
- *The Electrification Design-Build Contractor is several months behind in submitting progress schedule updates and recent updates have been rejected and returned with a Statement of Objection. The PCEP is operating without an accepted progress schedule for most of the work remaining on the project.*
- *The PMOC has repeatedly recommended that the PCEP increase scheduling resources to provide capacity to address "what if" scenarios in addition to routine schedule management activities.*

The JPB states that it asked its Program Management Consultant (PMC) to provide an additional scheduler over a year and a half ago, and although the PMC identified at least four (4) potential candidates, none have qualified. The PMOC notes that the Rail Operations group recently retained a schedule consultant to assist it in its role as part of the Rail Activation planning process.

- *The Electrification contractor's progress on OCS, Traction Power System (TPS), and signals work is far behind the initial plan. The original substantial completion date was April 28, 2020, but that date was contractually extended to August 10, 2020. The PCEP's current forecast for completing the OCS foundations is February 2021. The contractor's May 2020 Progress Schedule Update, the most recent update submitted, shows a Substantial Completion Date of April 20, 2024. The JPB has rejected this schedule and does not agree with this completion date.*

The FTA has requested that the PMOC conduct an independent risk assessment to assess the likelihood of the project meeting the cost and schedule requirements of the FFGA. A significant effort in preparing for this risk assessment will be identifying a reliable schedule for risk modelling purposes.

2.3 Project Management Plan (PMP) and Sub-Plans

The PMOC completed its review of the JPB's updated PMP and several sub-plans and procedures. The PMOC provided review comments on the updated documents in the form of tracked changes, as it completes each review.

The JPB's Rail Activation Committee (RAC) is continuing to work on its Rail Activation Plan (RAP). The RAP must be in place before testing of the new EMU's can begin. The RAC is making significant progress in developing the RAP, and the JPB's Rail Operations group has hired an independent consultant to assist them in developing the sections pertaining to Rail Operations responsibilities. The PMOC encouraged the JPB to get an early start on these activities and continues to monitor and support this work. The PMOC intends to conduct a modified OP-54 Readiness for Revenue Service review prior to the electrification of Segment 4 and the commencement of EMU testing in mid-2021.

2.4 Management Capacity and Capability

The PCEP's office staff is predominantly working from home in response to public health directives issued in connection with the COVID-19 pandemic and policy directives issued by the JPB. Internal and external meetings continue using various web-based collaboration platforms such as Zoom, WebEx, Go to Meeting, and Microsoft Teams. Field personnel continue to perform their assigned duties in keeping with applicable safety plans and public health directives. The PCEP's leadership reports that productivity has been largely unaffected by the COVID-19 restrictions.

The JPB's Chief Operating Officer – Rail has retained an independent consultant to assist with the assembly and development of the Rail Activation Plan and other materials related to starting-up the electrified system from the Rail Operations side. The consultant has been attending meetings of the Rail Activation and Systems Integration Committees as part of the assignment. *As noted elsewhere, Rail Operations has retained a consultant scheduler to support its participation in the Rail Activation process.* The PMOC is uncertain whether Rail Operations will continue its recruitment for a Director, Rail Program Integration, after retaining the independent consultant.

- ***PMOC Recommendations:*** *The PMOC continues to encourage the PCEP's leadership and Rail Activation and Systems Integration teams to move forward with determining who will lead the Rail Activation process and clarify the relationship between Rail Activation and the other supporting activities.*

2.5 NEPA Process and Environmental Mitigation

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 is negotiating a property rights transaction with the Santa Clara Valley Water District (SCVWD) which may result in the shifting of a stream channel. The JPB is assessing the environmental and permit implications of this transaction.

The JPB recently determined that the alignment of the interconnections between PG&E's East Grand Ave. substation in South San Francisco and its FMC substation in San Jose, and the JPB's Traction Power Substations 1 and 2 respectively, are slightly different than the alignments that were subject to previous environmental review. The JPB has advised the FTA of this development and has provided the FTA with an assessment of the environmental consequences of the changes. The JPB's opinion is that the environmental consequences of the new alignments are not significantly different than the original alignments. The JPB also continues to monitor the compliance of its construction contractors with the requirements of its FFGA and the supporting environmental documents.

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.

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 provided NTP in June 2017. *Work is underway on design and construction activities in all disciplines and all Segments of the corridor.*

Systems 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 equipment will be used to control the traction power system and design and integration activities are underway. 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.

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. *The tunnel work is complete except for inspection of the OCS in the tunnel bores. The contractor will return for final integrated testing and acceptance once the OCS is electrified.*

Used Electrified Locomotives

The JPB, at its June 7, 2018 meeting, approved contracts to acquire and overhaul two (2) used 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 prepared for long term storage until needed for 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 is the last of the PCEP's major construction contracts. *Completion of the work has been delayed by conditions encountered in the field and is now expected to be completed in December 2020. The Electrification contractor will install the OCS at CEMOF following completion of the modification work.*

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 is scheduled to start October 15, 2020.*

Upcoming Procurements

A solicitation is being prepared for acquisition of a scissor-lift for servicing EMU vehicles at the CEMOF. Negotiations continue with Stadler for supply of a pantograph inspection system for the new EMUs.

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.

The following electrification design and design-related activities are currently under way:

- Progressed the OCS design with BBII in all segments, which included submittal and review of Design Change Notices for revised foundation locations.
- Coordinated design review with local jurisdictions for the OCS, traction power facilities, and bridge attachments design, including responses to comments from jurisdictions.
- Continued to review and coordinate signal and communication design submittals with BBII.
- Continued discussions with FRA and CPUC on grade crossing design.
- Continued to progress the TPS interconnection design for TPS-1 and TPS-2.
- *Received Issued for Construction Design (IFC) for TPS-2 and continued to progress TPS-1 interconnection design towards IFC.*
- Worked with BBII through Site Specific Work Plans (SSWP) for upcoming field work.
- *Continued to work with PG&E and Silicon Valley Power (SVP) for the finalization of single-phase studies. Continued data conversion and model validation.*

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). The CCSF includes only properties in Segment 1 that will be needed later in the construction schedule.

Real Estate Activities

Initial Electrification construction took place in Segments 4 and 2 and has since been expanded to include all segments. Segment 4 includes electrification of a test track for testing and acceptance of the EMUs. Real estate acquisition is being coordinated with Electrification construction activities; however, the discovery of a variety of unexpected conditions at a large number of the planned OCS pole locations has resulted in the movement of numerous foundations, which in some cases requires acquisition of new rights-of-way.

The major challenges facing real estate are design changes that are impacting already acquired properties and design changes requiring new or re-defined acquisitions, shown on Table 1 below as additional parcels. Potholing for OCS foundations, and follow-on construction work located outside of JPB owned right-of-way (ROW), require that the JPB acquire the property or an appropriate property right.

The JPB has revised its format for reporting real estate activities and is no longer providing tabular data in its monthly reports. The JPB continues to state that the contractor has not claimed any delays because of late delivery of required real estate. The real estate team has recently completed, or is conducting the following activities:

- Reached settlement agreement with Willowbend Apartment's (Segment 3) legal counsel.

- Staff continues to review potential new pole locations and provide feedback to the design team.
- Staff continues to work with PCEP's internal signal team and BBII signal team to determine potential Real Estate interests.
- Pacific Gas and Electric Company (PG&E) (Cinnabar Site near CEMOF) - PCEP work on the site is nearing completion and over half the foundations have been installed. PG&E has signed the stipulated agreement for access and JPB has shared the appraisal document. PG&E has not agreed to a sale price but will provide an answer shortly.
- Santa Clara Valley Water District (SCVWD) (Marchese Parcel - Segment 3) - The agreement is with SCVWD Legal for review; SCVWD will be issuing a permit to JPB shortly.
- Bayshore Property (Segment 1 South of tunnels) - The JPB has requested early access in conjunction with reviewing design and has moved some of the poles that are of critical concern. There is now one pole of concern remaining. The new strategy for a long-term solution is to move forward with offer on the San Mateo portion of the property and delay slightly action on the San Francisco portion. Luis Zurinaga has offered his assistance in revisiting the cooperative agreement with the CCSF.
- Santa Clara Valley Transportation Authority (VTA) (Segment 4 near TPSS 2) - PG&E needs an easement from VTA and the language of easement is being discussed. VTA has provided comments on PG&E's easement deed and comments are currently being reviewed; there are also some technical issues that are being resolved. PG&E expects to send comments back by October 5, 2020. The October 15, 2020 date for start of construction of work on the interconnection is still feasible.
- Britannia Gateway (Segment 2 near TPSS #1)- The JPB will be asked for approval to make an official offer on October 1, 2020. The next step is to go to the November SamTrans Board to condemn the site. The project team is currently resolving design with property owner
- Staff continues to review of all potential electrical safety zones (ESZs) in Segments 2 and 1. This process has identified a handful of potential ESZ acquisitions to discuss with the contractor.
- The Resolution of Necessity (RON) package for Diridon Hospitality (Segment 4) is under review by VTA.

The status of real estate activity is presented in Table 1 below.

Table 1 – Real Estate Status (6-30-2020)

Segment	No. of Parcels Needed [1]	Appraisals Completed	Parcel Possession [2]
1	7 [4]	7	0
2	27	27	26
3	10	10	8
4	8 [3]	8	8
Additional Parcels	9	1	1
TOTAL	***61***	***53***	***43***

[1] During design development, the real estate requirements may adjust to accommodate design refinements. Parcel requirements will adjust accordingly. The table in this report reflects the current property needs for the Project.

[2] Possession obtained either through acquisition of parcel, possession date in contract or Order for Possession though condemnation action.

[3] Four (4) of the Segment 4 parcels are owned by PG&E.

[4] All seven (7) parcels are owned by a single entity.

- **PMOC Observation:** The continued appearance of new or redefined parcels as a result of shifts in the placement of OCS poles is problematic if possession is needed before foundations can be constructed. The JPB now holds regular meetings with BBII's designers in an effort to avoid or minimize such situations. Parcel availability may now be impacting the contractor's ability to place foundation.

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:

- *Palo Alto Power (PAP) has hired a contractor to relocate its facilities; however, work is behind schedule and PAP has been somewhat unresponsive. PAP has agreed to pay JPB for additional costs resulting from its delay.*
- *Worked with Comcast to re-sequence a few relocations in S4 to better support the construction schedule; have also worked with AT&T to remove some abandoned facilities.*
- *JPB is meeting with the fiber optic cable carriers on weekly basis to review locations of potential conflict and exceptions to clearance requirements.*
- JPB continues to assist Comcast in obtaining permits for San Jose, Palo Alto, and Redwood City.

  - **PMOC Observation:** 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.

Construction of the temporary power feed at PG&E's "FMC" substation in San Jose is complete and awaiting construction of the interconnection to TPSS #2. PG&E continues with the permanent modifications to both its FMC and East Grand Avenue Substations. Design of the interconnections between PG&E's FMC substation and TPSS #2 and PG&E's East Grand substation and TPSS #1 by the PCEP's Electrification contractor is nearing completion by TRC, a PG&E approved design consultant.

The JPB has negotiated a modification of Supplement 2 with PG&E under which PG&E will perform construction of the two (2) interconnections. *TRC is acting as the Construction Manager for PG&E and the construction work for both interconnections has been procured by competitive bid. Work on the interconnection to TPSS #2 is scheduled to begin October 15, 2020 and should be completed in February 2021 according to PG&E's schedule. This work is essential for the electrification of Segment 4 and the start of EMU testing. Construction of the TPSS #1 interconnect is scheduled to start on February 5, 2021.* The date for PG&E's supply of permanent power to the PCEP is currently shown as September 9, 2021; this activity is on the project's critical path.

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 PCEP's proposed solution to provide the required warning time at grade crossings must be approved by the CPUC before the modifications can be installed and the crossings returned to service. The JPB states that there is agreement on the use of two speed checks (2SC) to provide the required warning time at grade crossings between the PCEP team, Caltrain's Rail Operations, the Electrification contractor, the UPRR, and the FRA. As noted elsewhere in this report, the JPB and BBII continue to meet with the FRA to progress the 2SC solution. The most recent conference call with the FRA and CPUC was on August 4, 2020. During the call, an alternate strategy making use of a Request for Amendment (RFA) was suggested to satisfy the FRA requirements. *The FRA has stated that it does not need to review the plans for each crossing but will defer to the CPUC's judgement.*

The JPB continues to 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 CPUC has thus far approved six (6) crossings. The FRA does not approve the crossings, but has both regulatory and enforcement authority if the crossings do not perform as required by its regulations.

Union Pacific Railroad (UPRR)

The JPB is engaged in on-going confidential negotiations with the UPRR regarding a variety of issues. The UPRR 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. The UPRR is considering selling its rights to operate freight service in the Caltrain corridor to a short line operator. This arrangement, if completed, could simplify bringing the freight service operator into conformance with the JPB's PTC system. The JPB stated that it is negotiating with the UPRR to acquire the short line rights for the tracks north of Santa Clara.

The JPB received a letter from the UPRR, dated January 16, 2019, in which the railroad stated that it does not oppose the JPB's plan to provide the required grade crossing warning time, as long as the

JPB complies with the CPUC and other regulatory requirements. This letter cleared the way to move forward with final regulatory approvals.

California High Speed Rail Authority (CHSRA)

The California High-Speed Rail Authority (CHSRA) proposes to operate in blended service with Caltrain in the PCEP corridor in the future. The CHSRA's 2018 Business Plan calls for initial construction of the Silicon Valley to Central Valley line from Diridon Station in San Jose to Bakersfield. The plan would also expand electrification of the Caltrain corridor south of San José to Gilroy. The CHSRA released the staff-recommended preferred alternative to the public in July 2019 for comment. The CHSRA Board will decide on the preferred alternative that will be evaluated in the Draft Environmental Impact Report/Environmental Impact Study (EIR/EIS). The CHSRA continues to be in discussions with Caltrain, Caltrans, the City of San José, Santa Clara County, Union Pacific Railroad, and other partners about right-of-way and operational options, including how passenger and diesel freight trains could share the corridor. This sharing may potentially allow enhanced electrified service all the way to Gilroy, eliminating the need to use passenger diesel trains in the corridor and potentially allow the line to be used for express high-speed rail operations between San Francisco and Gilroy.

The JPB has been continuously involved in technical discussions with the CHSRA to ensure that the facilities being constructed as part of the PCEP are consistent with those being planned by the CHSRA. Representatives of the CHSRA are now participating regularly in a variety of PCEP meetings.

The JPB has moved forward with a plan to relocate a number of the 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. Prior to the issuance of a change order to BBII, the CHSRA will complete an environmental assessment to ensure that there are no new or substantially significant environmental impacts beyond those that were environmentally cleared in the PCEP EIR and Environmental Assessment (EA). This documentation will be shared with the FTA. All costs associated with the pole relocation work will be paid for by the CHSRA.

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 EMU vehicles, resolution of the CWT issue, and the agency's PTC program. 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 PTC progress.

2.11 Construction

The JPB provided the following report on construction activity.

- *Continued to install on-track and off-track foundations in Segment 3.*
- *Strung OCS feeder and static wires in Segment 2.*
- *Potholed at proposed OCS locations and utility locations in all Segments in advance of foundation installation. BBII and PCEP also continued to resolve conflicts found during the potholing process, such as loose concrete, asphalt, and other debris, and continued designing solutions for those conflicts that cannot be avoided. The conflicts must be resolved before installation of foundations at those locations.*
- *Relocated signal cables and removed abandoned facilities found in conflict with planned OCS foundations as conflicts were identified.*

- *Removed asbestos found in conflict with OCS foundations.*
- *Continued to install ductbank and manholes, drainage, and form and rebar work at TPS-1.*
- *Continued civil work and ductbank installation, and installed gantry foundations at PS-4.*
- *Continued site work and utility removal at PS-5.*
- *Continued to install signal ductbank, conduits, and cables in Segments 2 and 4.*
- *Performed cable termination at CP Michael.*
- *Installed cables at Luther Junction.*
- *Set signal houses at 45.21 and 45.57.*
- *Continued drilling of rails for impedance bond connections in Segments 1, 2, 3 and 4 at various control points and crossings.*
- *Continued installation of insulated joints (IJs) in Segment 3.*
- *Performed switch isolation in Segment 3.*
- *Install overhead bridge attachments at various locations in Segment 2 and 3.*
- PG&E continued work at East Grand and FMC substations.

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. Some CNPAs have been completed; the following are still active:

- TPSS-2 Pole Relocation (Design): Design changes due to the relocation of a Santa Clara Valley Transportation Authority (VTA)/ Bay Area Rapid Transit District (BART) pole at the TPSS-2 location. This scope is funded by the VTA.
- OCS foundations, as part of the South San Francisco Station construction in Segment 2: *This work is in construction and 20 of 30 foundations are complete.*
- *65 OCS foundations were installed as part of the 25th Avenue Grade Separation Project in San Mateo, the new overcrossing is in service and substantial completion is May 2021.*
- Installation of additional flip-up seats in EMU bike cars. This work will be 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:

- COVID-19 related actions continued for the sixth month causing mixed disruptions to Stadler's activities:
  - *Stadler has submitted a request for an 'excusable delay' due to COVID-19. The extent of the continuing delay is being evaluated. Currently, shipping the first trainset to Pueblo, Colorado for testing has been delayed until January 2021. The date for shipment of the first trainset to be delivered to Caltrain is under discussion; prior to the latest delay of testing at TTCI it was scheduled for April 2021.*
  - *Salt Lake City-based 'Type Testing' of Trainset No. 1 continues has resumed after some key Stadler and sub-supplier personnel were able to return to the United States. A problem with the 25kV propulsion transformers on TS1 has been resolved; the problem was caused by air bubbles in the transformer's cooling system.*
  - Stadler's three manufacturing facilities (two in Switzerland and one in Salt Lake City) supporting the Caltrain Project have returned to near normal levels of activity.
  - The Switzerland-based manufacturing of car shells and trucks frames is on schedule.
  - Parts shortages in Salt Lake City are being tracked daily and are not significantly delaying manufacturing.
- First Article Inspections (FAIs) continue to have their paperwork formalized and closed out.
- *49 car shells have been shipped from Stadler - Switzerland with 43 onsite in Stadler's Salt Lake City facility.*

The FRA on-site design review in Salt Lake City was rescheduled because of the travel restrictions associated with the COVID-19 pandemic; the review took place July 8-9, 2020. One problematic issue has been identified; FRA would like barriers between stored bikes and wheelchair parking areas. This is a significant change; Stadler has developed a conceptual design solution that is being reviewed by the JPB.

Regulatory Issues

- The FRA approved the JPB's waiver request related to use of alternate crashworthiness design standards for the EMUs; this waiver is the first of its type.
- The FRA, in a letter dated June 8, 2018, denied the JPB's request for a waiver on the use of the high-level doors for emergency egress from the EMUs. The JPB previously developed an alternative to address this possible outcome. The alternative is complicated and requires creation of an interim configuration that replaces the high-level doors with an emergency exit window. The JPB's Change Management Board, as noted above, approved the installation of temporary panels in place of the high-level doors until the trains operate in blended service with the CHSRA.
- The JPB's Change Management Board, at its September 2019 meeting, approved the JPB's request for a change order that will install additional flip-up seats and railings in each of its bike cars. The flip-up seats and railings accommodate access to emergency egress windows in the bike cars. This request came from Caltrain's bicycle user community. *The FRA observed the configuration of the bike cars during its July 2020 visit to Stadler's plant and requested that additional barriers be installed between the bicycles and the designated Americans with*

Disabilities Act (ADA) seating location. Stadler has developed a design proposal which is being reviewed by the JPB.

- The FRA denied the JPB's request for a waiver for a passenger emergency door opening system that in Caltrain's opinion is safer for its system; the FRA required system will be installed.

2.13 Project Cost

Table 2 below presents the PCEP costs as of August 31, 2020. The JPB re-forecasts the estimated cost at completion (EAC) monthly. The JPB had expected to re-baseline its Capital Cost Estimate in mid-2019 after it had assessed the cost and schedule impacts to the Electrification contract, had issued the CEMOF Modification contract, and completed its Monte Carlo risk assessment update to inform the contingency requirements. However, the re-baselining did not occur.

The PMOC's review of the Monte Carlo model used in 2019 revealed that the schedule information did not include recent information related to the completion of the signals work, and in particular, the impact of the final resolution of the grade crossing warning system. *The schedule model used in the April 1, 2020 Risk Refresh Workshop was updated with more current schedule information and was used to project the indirect (time related) cost of risk. The total cost of risk is the sum of the direct cost of risk generated by the cost model and the indirect cost of risk generated by the schedule model plus a management reserve. The results of the cost and schedule risk analysis were combined and have been shared with the JPB's funding partners. That information is not reflected in the EAC shown in Table 2.*

Table 2 – Project Cost Table at 8-31-2020 ($ millions) [1]

SCC Category	Original Budget	Current Budget	Expenditures to Date	Earned Value [2]	Estimate to Complete	Estimate at Completion
10 Guideway & Track	$14.3	*$27.4*	*$25.0*	N/A	*$2.8*	*$27.8*
30 Support Facilities	$2.3	*$6.9*	*$4.2*	N/A	*$3.8*	*$8.1*
40 Sitework & Special Cond.	$255.1	*$270.1*	*$189.3*	N/A	*$85.7*	*$275.0*
50 Systems	$504.4	*$525.0*	*$187.0*	N/A	*$350.1*	*$537.2*
Construction Subtotal	**$776.0**	***$829.3***	***$405.6***	N/A	***$442.4***	***$848.0***
60 ROW	$35.7	*$35.7*	*$20.4*	N/A	*$15.3*	$35.7
70 Vehicles	$625.5	*$623.6*	*$225.3*	N/A	*$396.8*	$622.1
80 Prof. Services	$323.8	*$335.7*	*$308.5*	N/A	*$48.3*	*$356.8*
90 Unallocated Contingency	$162.6	*$96.5*	$0.0	N/A	*$58.1*	*$58.1*
Capital Cost Subtotal	**$1,923.7**	***$1,920.8***	***$959.9***	N/A	***$960.9***	***$1,920.8***
100 Finance Cost	$7.0	*$9.9*	$6.5	N/A	$3.4	$9.9
TOTAL	**$1,930.7**	**$1,930.7**	***$966.4***	***$741,6***	**$964.3**	**$1,930.7**

[1] Totals may not add due to rounding.

[2] The PCEP does not currently report earned value by SCC; the total earned value is taken from the JPB's Core Accountability submission.

PMOC Note: The JPB publicly reports expenditures against a total project budget of $1,980,252,533. 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.

Cost Contingency Status

Table 3 summarizes the project contingency as of August 31, 2020 for the project.

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

Contingency Category	Baseline Contingency (YOE)	Current Contingency (YOE)	% of Work and Contingency Remaining
Allocated	$152,9	*$38,3*	50.0%
Unallocated	$162,6	*$58,1*	
TOTAL	**$315,5**	*$96,4*	**30.6%**

[1] Totals may not add due to rounding.

The cost contingency balance is currently above the amount required by the JPB's drawdown curve; however, a significant amount of remaining contingency is already "effectively encumbered" by change orders in progress and other expected adjustments.

Project Funding

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 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: *The JPB reported issuing Change Orders (COs) to BBII in the approximate amount of $1,084,000 during the period from June through August 2020. The COs cover additional long-real pole foundations (unit price item), additional signal cable protection, utility relocation, and payment for track access delays in several periods.*

EMU Contract Changes: *The JPB issued one Change Order in the amount of $43,000 during the period of June through August 2020 for creation of the Virtual Reality experiences. This Change Order was not funded by the PCEP. The JPB continues to negotiate with Stadler on the pantograph inspection system.*

Tunnel Contract Changes: *The JPB issued two (2) Change Orders totaling $45,261 during the period of June through August 2020. The COs covered masonry reconstruction for the south portal of tunnel 4 and a low-overhead obstruction in tunnel 1 north.*

CEMOF Contract Changes: *The JPB issued Change Orders totaling $92,075 during the period of June through August 2020. The COs cover a number of minor changes at the CEMOF.*

Contractor Claims

The Electrification contractor has submitted a total of four claims; the most significant claim is associated with its efforts to provide the required warning time at grade crossings. Other claims include denial of a Design Variance Request for alternate feeder and contact wire; percent of payment for CWT under Allowance Item #10; and costs for an alternate designer for Segment 1A. The four (4) claims are described in greater detail below.

The JPB and BBII, the Electrification contractor, continue to meet in a technically facilitated mediation process in an effort to resolve these issues. *The main issue is related to the grade crossing warning system. The mediator put forth a proposal in mid-June 2020 resulting in several follow-on meetings. A meeting that included the two (2) project principals and the two (2) main signal subcontractors occurred on July 17, 2020. The parties are in relative agreement on direct costs of implementing the grade crossing warning system, but far apart on time impacts. A follow-on schedule workshop was held on July 28, 2020. The parties continue to meet, and the JPB reports that discussions with the signal contractors have been helpful. The next call is scheduled for September 28, 2020.*

- The Electrification contractor has been reporting a delay to its substantial completion date for many months based on its alleged inability to begin work on the grade crossing warning system as planned in its baseline schedule. The delay has been day-for-day. The Electrification contractor submitted a delay claim on behalf of its signals' subcontractor, and shortly thereafter, submitted its Time Impact Analysis (TIA) for the delays associated with the grade crossing warning issue. The transmittal letter for the TIA presented a Change Order Cost Proposal in the amount of $239,550,209 consisting of $71,882,763 in Direct Costs and $167,667,445 in Delay Costs. The time impact presented in the letter is 1,092 calendar days, made up of 224 calendar days associated with Change Order No. 41 (the 5 MPH Solution) and 868 calendar days to perform the added scope or work. [**PMOC Note:** Prior to the development of the dual speed check solution, the contractor had been working on an approach which would have used a series of detectors to provide warning time based on train speeds in 5 mph increments. Change Order No. 41 was issued to the contractor for the direct cost of that work.] The amount of the subcontractor's claim mentioned above is included in the Change Order Cost Proposal. The JPB has denied the contractor's claim. The JPB is proceeding with a detailed review of the TIA. The TIA process is the first step in determining whether the contractor suffered a delay, who is responsible for the delay, whether there are offsetting delays, and whether the delay is excusable and/or compensable. Once the circumstances are determined, there may be opportunities to mitigate schedule impacts by a variety of techniques.
- The Electrification contractor submitted a Design Variance Request (DVR) in 2017 to substitute alternative products for the specified Autotransformer Feeder (ATF) Wire and Static Wire used in the OCS. The JPB reviewed the request in 2017, but never took the formal action required to approve the request. The JPB subsequently rejected the DVR. The contractor does not agree with the JPB's position and has submitted a claim for resolution.

2.14 Project Schedule

The FFGA was executed on May 23, 2017.

The JPB updates its Master Project Schedule (MPS) monthly; the September update has a status date of September 1, 2020 and is MPS C20.03. The JPB had planned to re-baseline its current MPS in 2019 to account for a number of significant changes including the contract award dates for the tunnel and CEMOF contracts; differing site conditions impacts on OCS construction; progress on

the PG&E substations and interties; and implications of the CWT issue. The re-baselining was not accomplished as planned because the PCEP team did not receive an acceptable Time Impact Analysis (TIA 2) from the contractor for the delays associated with resolving CWT. *Without accurate schedule information related to the CWT and other signals activities, re-baselining would be largely ineffective.*

The JPB initially rejected TIA 2 as submitted by the contractor in mid-2019; however, the JPB subsequently reviewed TIA2 to better understand the contractor's position and as an aid in preparing the JPB's own shadow schedules. The evaluation of TIA2 was never completed. According to the JPB, the substantive issues that led to the creation of TIA2 by the Electrification contractor have not been a major topic in the mediation proceedings underway between the JPB and that contractor.

The February 2020 schedule, when considered with the contractor's earlier schedules, provided sufficient detail on the signals design, construction, and testing activities for the PCEP scheduling team to complete the construction of its shadow schedule. The PMOC discussed scheduling progress with the PCEP scheduler on March 17, 2020 in advance of the April 1 Risk Refresh Workshop, and again during its virtual meeting on May 19, 2020. *The April 2020 Risk Refresh Workshop used MPS C19.0 for schedule risk modeling. MPS C19.0 was created using the then current MPS 18.15 with modifications based on signals details contained in BBII's February progress schedule update. The scheduling team then applied several "mitigation strategies" to reduce the overall duration of the resulting schedule. Some of the mitigation strategies were corrections of errors that resided in BBII's schedule updates, others were based on assumptions of productivity that could be achieved by the contractor working in a more collaborative manner. Following the completion of the Risk Refresh Workshop, MPS C20.0 was introduced with a status date of June 1, 2020. As noted above, the most recent MPS is C20.3 with a status date of September 1, 2020.*

By way of comparison, the Electrification contractor's most recent Progress Schedule Update Narrative report for May 2020, received August 17, 2020, shows a substantial completion date of April 20, 2024, compared to the contractual date of August 10, 2020, or a total delay of 1,349 calendar days to substantial completion. The JPB has rejected the contractor's recent schedule updates and the contractor's written narrative is only one factor in determining whether the project has been delayed and which party or parties is responsible for that delay.

Significant schedule variances mentioned in the JPB's May, June, July, August, and September 2020 internal schedule updates include:

Electrification

1. *All schedule updates received from Balfour Beatty during the period were received late and have been rejected by the JPB. The May 2020 progress schedule, the most recent schedule update received, was submitted on August 17, 2020. Recent updates contain only actual progress, without revision of sequence or duration of activities.*
2. *JPB completed an evaluation of Balfour Beatty's February progress schedule, with a focus on the critical path (signal system). This analysis has resulted in a change to substantial completion from January 2022 to February 2022. This change to the MPS subsequently delays the start of Phased Revenue Service from February 1, 2022 to February 27, 2022.*
3. *Signals design progress continues to lag behind baseline productivity levels; additionally, BBII has still not incorporated all Two Speed Check (2SC) impacts into their progress schedule.*
4. *Design of PS1, PS-3, and PS-5, and construction at TPS-2 continues to progress at a slow rate. Forecasted substantial completion date for BBII may be in jeopardy due to delays in overall traction power facility (TPF) progress.*

EMU Vehicles

5. *Stadler's March progress schedule/revised baseline schedule submitted with significant issues; not incorporated into MPS update.*
6. *Stadler has notified the JPB of schedule delay due to COVID-19. The program schedule has been updated to reflect these impacts. These impacts affect the assembly and test of all trainsets, most notably the following milestones: 1. Arrival of the first trainset in Pueblo, CO delayed from September 2020 to November 2020; 2. Arrival of the first trainset on JPB property delayed from February 2021 to April 2021; 3. Conditional acceptance of the 14th trainset from May 6, 2022 to July 22, 2022. The JPB will continue to monitor the situation as it evolves.*

PG&E

7. *The program schedule has been updated to reflect the decision to have PG&E perform the interconnection construction. The PG&E-provided schedule has been incorporated into the program schedule. This update results in a delay in Segment 4 completion of 39 days.*

Table 4 below, which is based on the MPS C20.03 with a Data Date of September 1, 2020, shows the current projected dates for completion of various significant project activities.

Table 4 – Schedule Key Milestone Dates

Milestone	Baseline	Grantee Forecast	PMOC Forecast
Design/Build Notice to Proceed:	12/2015	06/2017 (A)	
Final Engineering (FE) Completion:	04/2018	03/2021 (P)	03/2021 (P)
Systems Integration Testing Completed:	01/2019	*02/2022 (P)*	*02/2022 (P)*
Design/Build Substantial Completion:	02/2019	*03/2022 (P)*	*03/2022 (P)*
Conditional Acceptance of First EMU Trainset:		08/2021(P)	08/2021(P)
Pre-Revenue Operation Completed:	05/2020	*07/2022 (P)*	*07/2022 (P)*
Revenue Service Date (without Risk Contingency):	12/2021	*07/2022 (P)*	*07/2022 (P)*
FFGA Final Completion Date:	05/2020	08/2022 (P)	08/2022 (P)
(P) Planned Date (A) Actual Date			

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 manufacturing, testing and acceptance of trainsets 1 - 14. The critical path for electrified operations runs through design and construction of the OCS, TPS, SCADA and signals elements, integrated testing, and completion of rail activation activities including safety certification. The JPB reports that the Electrification schedule is currently driven by the signals design activity.

Schedule Contingency Status

The JPB reported the following related to schedule contingency: "The COVID-19 impact on Stadler's schedule has also caused a delay on program completion. The Revenue Service Date has been delayed from May 6, 2022 to July 22, 2022. This delay has resulted in a contingency drawdown of 77 days, decreasing overall contingency from 108 days to 31 days. As the COVID-19 pandemic is a force majeure event, the JPB is reviewing its FFGA RSD obligation."

Revenue Service Date

The PCEP's current schedule includes revised logic related to the start of passenger service using the new EMUs; this approach is referred to as Phased Revenue Service. The PMOC understands that the JPB intends to conduct a short period of pre-revenue operations following the completion of integrated testing, and then transition to revenue service using the EMUs that have been accepted. This concept is included in the Rail Activation Plan currently being prepared. The JPB has determined that the Core Capacity requirements can be satisfied when fourteen (14) seven-car EMU trainsets are in revenue service. The Final Completion Date in the FFGA is August 22, 2022.

Next Steps

The lack of an accepted schedule for the electrification work, the consistent late delivery of schedule updates by the contractor, much slower than anticipated production of OCS, TPS and signals work, unresolved time impacts in negotiated change orders, and the recent reduction in schedule contingency to a very low value, given the amount of work remaining, led the PMOC to recommend that the FTA conduct an independent risk assessment. That risk assessment is scheduled for early December 2020. The objective is to independently assess the likelihood of the PCEP's completion within the schedule and budget established in the FFGA.

- **PMOC Observations:**
  - Uncertainty regarding the completion schedule for the PCEP is the most pervasive issue affecting the project.
  - The inability or unwillingness of the Electrification contractor to produce a realistic schedule for completion of the remaining work, which the JPB can accept contractually, is a significant factor preventing the parties from moving forward toward a common goal.
  - Despite the JPB's initiation of small groups focused on the resolution of specific issues, e.g., potholing and foundations, new real estate parcels, and signals design, actual progress remains slow and new challenges continue to appear and/or old issues remain unresolved.
  - The contractual relationship between the JPB and its Electrification contractor, as viewed by the PMOC in observing meetings, reviewing correspondence, meeting minutes, and the exchange of technical documents, is seldom collaborative and occasionally combative. Both parties must be spending an enormous amount of resources to sustain this condition. This is money and energy that could be better spent working together to complete the project in a timely fashion.
  - The PMOC is not clear whether the mediation process, which the parties began late in 2019 to resolve some very significant contractual issues, is making progress, or that it is contributing to an improvement in progress of the work.
  - The PMOC's opinion, expressed previously, is that the JPB management team is lean for a project of this size and complexity.

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 JPB conducted a Risk Refresh Workshop on April 1, 2020; because of the COVID-19 pandemic, the workshop was held using web-collaboration software. The workshop was well planned and executed, and all risks on the Risk Register were reviewed and re-graded as needed.

The Monte Carlo cost model was run shortly after the workshop was concluded and the direct cost of risk was determined. This information was shared with the JPB's funding partners. Analysis of schedule risk was delayed until additional signal details were incorporated into the Master Project Schedule. The PCEP team applied schedule mitigation strategies to account for inconsistencies in the schedule information obtained from the contractor's schedule before finalizing the schedule results. The mitigated schedule was used to determine the indirect cost of risk, i.e., the cost resulting from the modeled schedule delay multiplied by the daily overhead charges of the various project participants. The total cost of risk is the sum of the direct and indirect costs of risk plus a management reserve. The results of the cost and schedule risk analysis were combined and have been shared with the JPB's funding partners.

The Top Risks, with risk number, are shown in Attachment C. Risks shown in italics are new to the list of Top Risks since the previous monitoring report. ***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 following are other current risk related activities:

- *The PCEP revised its Risk Identification and Mitigation Plan (RIMP) in response to the PMOC's comments and re-issued the RIMP as Rev. 2 dated May 1, 2020.*
- The Risk Management Committee decided to change the standard for Top Risks to a score of twelve (12) or higher; previously the standard was 18 or higher.
- The Rail Activation Risk Register was developed; risks will be grouped into one of three categories: Risks already in the risk register; risks that are the PCEP's responsibility; and risks that are the JPB's responsibility.
- The Systems Integration Risk Register is not moving forward at this time but will be reintroduced later.
- The Contractor Risk Management Program will also not proceed at this time; the PCEP will pursue the program later.

➢ **PMOC Observations:** *The PMOC is concerned that the schedule used in the Monte Carlo simulation was a schedule constructed by the JPB using the contractor's activities, durations, and logic. The JPB then applied a series of mitigation measures to reduce the overall duration. Although some of the mitigation strategies had been discussed previously, all the details are not known; therefore, it is not possible to assess the reasonableness of the changes which bear directly on the results.*

➢ The changes in risk ranking, and the addition of new risks or the retirement of existing risks, is the result of the PCEP's risk management process. The decisions are made at the Monthly Risk Management Committee meetings and the rationale for the changes is not always fully articulated in the monthly risk register updates or the Risk Management Committee meeting minutes reviewed by the PMOC.

2.16 Quality Assurance / Quality Control (QA/QC)

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

Infrastructure Projects

- *The safety calculations for Nonconformance Report (NCR) 41 are incomplete; this information has been forwarded to BBII in Aconex*
- *Eight CEMOF audit findings are closed.*
- *BBII's two audit findings for poles and wires installation are still open.*

EMU Quality

- Salt Lake City (SLC): Nine (9) findings were identified; one remains open. Stadler has responded and their response is under review.
- Vapor Stone Heating Ventilation Air Conditioning (HVAC): Eight (8) findings were identified; seven (7) remain open; Stone's response was recently submitted and is under review.
- RailPlan Toilet: Nineteen (19) findings were identified; sixteen (16) are closed; three (3) require additional information.
- Corrective Action Requests (CARs) were sent to Stadler regarding overall Quality Assurance (QA) issues in Altenrhein and SLC; the CAR has resulted in an immediate and positive result in Altenrhein; no response yet from SLC.

  - **PMOC Observations and Recommendations:** The PMOC has initiated a discussion on the role of the PCEP's quality management team as related to the Systems Integration, Rail Activation, Safety and Security Certification, and Testing and Start-up activities that will be required as the project develops its overall plan for these current and late stage activities.

2.17 Safety and Security

The JPB contracts for safety and security consulting services to support the PCEP. *The PCEP safety team also supports the JPB, which now has an Acting Director Safety/Security.*

The JPB's did not begin its planned transition back to the San Mateo office on June 15, 2020 as planned because of an increase in the number of Coronavirus Disease 2019 (COVID-19) cases in the Bay Area. Most team members continue to work from home. An automated temperature testing station has been installed in the San Mateo office building along with a mandatory log-in/out process for those few employees working in the office. PCEP team members will need to continue with precautionary measures that comply with the County Health Ordinance.

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.

BBII, the Electrification contractor, recently reported the following incidents:

- *A signal cable was damaged by a potholing crew using power equipment rather than hand potholing.*
- *A foundation train derailed while leaving the Santa Clara yard; no injuries or damage was reported.*
- *9/15/2020 A battery theft occurred at Luther Junction; thieves cut the fence and disconnected the battery before removing it.*

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 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 Americans with Disabilities Act (ADA) requirements.

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 developed a conceptual design to address this issue and the JPB is reviewing the design.

2.19 Buy America

The JPB is working on a response to the PMOC's request for confirmation that the JPB's contractors are complying with the Buy America Act as it relates to their individual contracts. None of the JPB's contractors have requested Buy America waivers thus far.

The EMU vehicle consultant reports that Stadler's Buy America compliance continues to exceed the 60% requirement. The vehicle consultant is awaiting updated information from Stadler before determining whether it will perform an intermediate Buy America audit.

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.

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

- *BBII is preparing test plans and schedules for its work elements, Operations and Maintenance (O&M) manuals, and is participating in the project-wide Systems Integration and Safety and Security Certification Committee meetings.*

- BBII has a sub-contracted Safety Certification consultant who is now assisting completion of the required documentation.

EMU Contract

- *The FRA-required Pre-Revenue Service Test Plan for the EMUs has been submitted in draft form for FRA comment.*
- *Stadler is completing the assembly of Trainset 1 (TS1) and debugging the various on-board systems in preparation for the Type Testing of the vehicle in Salt Lake City before shipping it to the TTCI in Pueblo, CO for performance tests.*
- *Stadler is participating in the project-wide Systems Integration and Safety and Security Certification Committee meetings.*

SCADA Contract

- *The Factory Acceptance Test (FAT) did not occur as expected in June 2020; however, a pre-FAT was conducted which disclosed a number of defects that are being corrected.*
- *ARINC is finalizing draft training plans for submission to the JPB on October 2, 2020.*

Readiness for Electrified Rail Operations

As noted above, the PCEP has established a Rail Activation Committee (RAC). The RAC is currently chaired by Sal Gilardi, one of the two principals of the safety contractor, until a permanent chair is named. The RAC includes representatives from the PCEP's technical consultants and the JPB's Rail Operations group. The Rail Operations consultant has engaged a scheduler to further develop the Rail Activation Schedule; the PCEP scheduler is no longer involved in the RAP. The most recent meeting of the RAC took place on September 17, 2020. The main point of discussion was the sequence of activities leading up to the electrification of Segment 4. It appears that electrification of Segment 4 will not take place until summer 2021; the delivery of the last TPS component in S4 is now expected in April 2021. The first EMU is currently expected to arrive in April 2021. The next meeting of the RAC is scheduled for October 22, 2020.

- **PMOC Observations:** The PMOC recommended that a separate risk workshop be conducted to identify the potential risks associated with the rail activation process, including testing and commissioning, systems integration, safety and security certification, rail operator and maintainer hiring and training, and revenue service demonstration. *The PCEP Risk Lead conducted a risk workshop for the Rail Activation Committee in May 2020 and a risk register has been developed.*
- *The PMOC is concerned that the linkage between the Rail Activation Plan and the construction and testing activities being done under the PCEP is not well defined and the lack of a specific connection between the two schedules is troubling.*

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 will verify 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.

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
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.
BGSP	Broadway Grade Separation Project
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
CCIP	Contractor Controlled Insurance Program
CCSF	City and County of San Francisco
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
EE	Entry into Engineering
EIR	Environmental Impact Report
EIS	Environmental Impact Study
EMU	Electric Multiple Unit Rail Vehicle
ESZ	Electrical Safety Zone
ETB	Electrified Trolley Buses
FAI	First Article Inspection

Acronyms	List of Terms
FAT	Factory Acceptance Test
FCD	Final Completion Date
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
ICE	Independent Cost Estimate
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
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
OCS	Overhead Contact System/Overhead Catenary System
PAP	*Palo Alto Power*
PCEP	Peninsula Corridor Electrification Program
PCWG	Peninsula Corridor Working Group
PD	Project Development Phase
PG&E	Pacific Gas and Electric
PHA	Preliminary Hazard Assessment
PMOC	Project Management Oversight Contractor
PMC	*Program Management Consultant*
PMP	Project Management Plan
ProVen	ProVen Management, Inc.
PS	Paralleling Station for Traction Power Supply
PTC	Positive Train Control
PTCSP	*Positive Train Control Safety Plan (FRA)*

Acronyms	List of Terms
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
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)
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
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
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
TPF	Traction Power Facility
TPS	Traction Power System
TPSS	Traction Power Substation
TrAMS	Transportation Award Management System

Acronyms	List of Terms
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 Cabinet
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 6*	Y	Reviewed June 2020
Safety and Security Certification Plan (SSCP)	Rev 0		Under Review
System Safety Program Plan (SSPP)	Rev 7		Under Review
System Security Plan or Security and Emergency Preparedness Plan (SEPP)	Rev 0		SSP being revised
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?	TBD	Not known at this time
Did the oversight agency participate in the last Quarterly Review Meeting?	*Y*	*QPRM No. 13 was held July 28, 2020*
Has the project sponsor submitted its safety certification plan to the oversight agency?	TBD	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.
SSMP Monitoring		

Safety and Security Checklist		
Area of Focus	**Y/N**	**Notes/Status**
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this	Y	
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	PHA Rev. 1, APR 16
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 monthly. 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	PHA Rev. 1 APR 16, Under review. A PHA has been prepared for changes to the CEMOF facility to accommodate the new EMUs. A PHA has been prepared to address the 2SC grade crossing warning approach and provided to the FRA. TVA Rev. 1 APR 16, Under review. OHA is currently being developed.
Has the project sponsor ensured the development of safety design criteria?	Y	
Has the project sponsor ensured the development of security design criteria?	Y	
Has the project sponsor ensured conformance with safety and security requirements in design?	Y	Design Criteria checklists are currently being developed and reviewed by the Safety & Security Certification Review Committee.

Safety and Security Checklist		
Area of Focus	**Y/N**	**Notes/Status**
Has the project sponsor verified construction specifications conformance?	Y	Currently only for foundation construction and OCS pole erection which is under way.
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. Final Completion Date is 8-22-2022.
Has the project sponsor issued the final safety and security verification report?	N	Project is in construction. Final Completion Date is 8-22-2022.
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
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 review of the Design-Build contractor's reported OSHA statistics revealed that some incidents had been miss-classified; this raised the Incident Rate above 3.0 for the period. The project showed a Total Recordable Incident Rate of 2.033 for the year 2019 compared to the most recent (2018) BLS rate of 2.6 for Heavy and Civil Engineering construction.
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 attended QPRM No. 13 on July 28, 2020.*

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
13.01	*JPB to review and assess BBII's Buy America compliance practices and results and report on its findings and any needed remedial actions.*	*Per FTA's direction, the JPB must determine whether BBII is satisfying the BA requirements in its grant.*	*NLT QPRM #14*	*Larano*	*The PCEP's QA Manager has previously reviewed samples of BBII's BA documentation.*
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.*	*PCEP staff spoke with Carolyn Hayward Williams of FRA and her staff on August 4, 2020. A new strategy was recommended to satisfy FRA's requirements related to implementation of the 2SC solution.*	*Amendment to be submitted after Caltrain's PTCSP is approved and documented test results are available from one or more crossings. Schedule for submittal of the RFA is likely first quarter calendar 2021.*	*Funghi/Cocke and Bouchard*	*This Action Item replaces 10.02 which has been closed.*

Attachment D Top 5 Project Risks

Risk No.	Risk Category		Risk Description	Status
	Cost	Sched.		
314	X	X	Design and construction of grade crossing modifications that meets stakeholder and regulatory requirements may cost more than was budgeted and delay the revenue service date.	*Design progress is slower than required. Sponsor is engaged in mediation to improve production.*
303	X	X	Extent of differing site conditions and delays in resolving differing site conditions delays completion of electrification increases program costs. The contractor is encountering more DSCs than anticipated and taking longer to resolve.	*This problem continues to impact design and construction of OCS foundations. Approximately 36% or 1151 of the planned 3120 foundations remain to be constructed.*
313	*X*	*X*	*Sub-optimal contractor sequencing, when progressing design and clearing foundation locations may result in construction inefficiencies*	*Sponsor holds weekly meetings with Electrification contractor to focus on problem areas and remove impediments where possible.*
240	*X*	*X*	*Property not acquired in time for contractor to do work.*	*A limited number of problem parcels remain; however, shifting of foundation locations may result in new or altered acquisitions.*
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.*
Top five (5) risks as shown on Risk Register dated 9-25-2020				

Attachment E Awarded Contracts

This information will be provided in a future report following clarification by the FTA. The current list of contracts numbers over 130. Sixty-four (64) contracts have values over $50,000, and fifty-seven (57) have values over $100,000. The total value of awarded contracts is provided in the Core Accountability Table of this report.

Contract	Contractor / Consultant	Base Contract Value	Value of Changes / Amendments	Current Value	Incurred Amount	Start Date (NTP)	Completion Date

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:** *July 29, 2019 / April 30, 2021 (Planned)*
- **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 63.23% to 74.81% for the four (4) different car types variants as of March 2018.*
- **Date of Pre-Award Audit:** *May 25-26, 2016*
- **Pre-award Audit Report Date:** *June 21, 2016*
- **Intermediate Buy America Audit Date (If Planned):** *March 19-21, 2018; TBD mid-2021*
- **Date of Post-Delivery Audit:** *TBD*
- **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	*11/25/2020 (P)*	
Arrival of First EMU at JPB	07/2019	*04/30/2021 (P)*	
Final Engineering (FE) Completion:	04/2018	03/2021 (P)	
Systems Integration Testing Completed:	01/2019	01/2022 (P)	
Segment 4 Complete to Begin EMU Testing:	11/2019	*06/2021* (P)	
Completion of Interconnection from PG&E to TPSS 2	N/A	*12/15/2020 (P)*	
Design/Build Substantial Completion:	02/2019	*03/26/2022 (P)*	
Conditional Acceptance of First EMU Trainset:		*12/17/2021(P)*	
PG&E Provides Permanent Power:	09/2021	09/2021 (P)	
Pre-Revenue Operation Completed:	05/2020	*03/26/2022 (P)*	
Begin Phased Revenue Service:		03/27/2022 (P)	
Revenue Service Date (without Risk Contingency):	12/2021	07/22/2022 (P)	
FFGA Final Completion Date:	05/2020	08/22/2022 (P)	

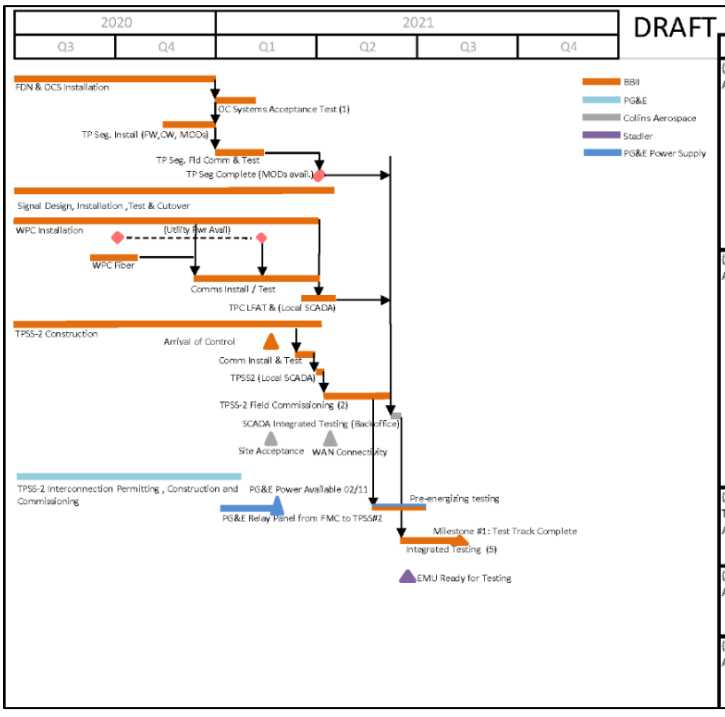
Attachment H Roadmap to Electrified Rail Service

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 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.

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 shows the FCD as August 22, 2022.

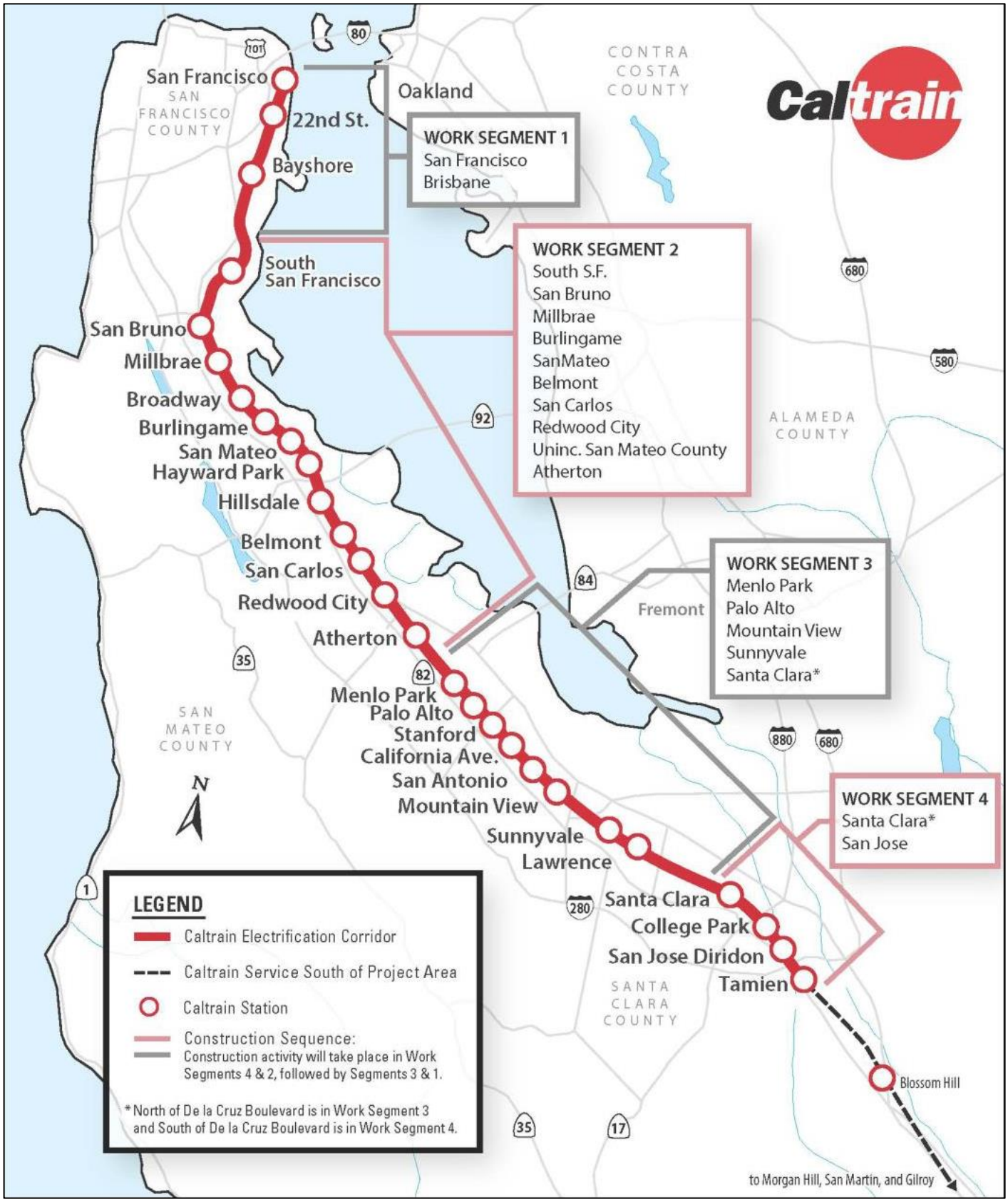
The PCEP established a Rail Activation Committee (RAC) to coordinate the various activities needed to successfully initiate electrified rail operations. The RAC is currently chaired by Sal Gilardi, one of the two principals of the PCEP's safety contractor, until a permanent chair is named. The RAC includes 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 of rail activation, systems integration, and testing and commissioning meetings to make the resulting RAC meetings more productive. The RAC has produced a Draft Rail Activation Plan, and an accompanying schedule. A summary schedule for the electrification of Segment 4 is shown below. The most recent meeting of the RAC took place on September 17, 2020. The RAC also held a Rail Activation Risk Workshop which produced a Risk Register with a total of 34 risks, each of which was discussed.

Figure H-1 Segment 4 Electrification Schedule



Test	Description	Calendar
(1) OC Systems Acceptance Test Activity ID: OC-04-0000	• Short circuit testing • HiPot Test • Loop Resistance Test • Pantograph Clearance Check • Acceptance Measurements Check • Mechanical Inspection / Clearance • OCS Disconnect Switches • Grounding & Bonding Tests • Energized?	No restrictions 40 cal. days 320 hours
(2) TPSS-2 Field Commissioning Activity ID: TS-04-4520	• Transformer Pre-Energization Test (10 MVA, 60 MVA) • Circuit Breakers Test (115kV) • Low Voltage Cable Megger and Continuity • High Voltage Power Cable Megger and HiPot • Control Building Commissioning • Substation Ground Grid (completed earlier) • Substation Energization • Load Test (PG&E, if required) • Short Circuit Tests	No restrictions 90 cal. days 720 hours
(3) Comm / SCADA Acceptance Testing & Commissioning Activity ID: SG-04-1020	• Traction Power Substation Monitoring • Wayside Power Cabinet Monitoring • Signal Systems Monitoring	No restrictions 20 cal. days 160 hours
(4) Field Commissioning Activity ID: TS-04-4000	• Energization by segment, sectionalizing • Energization of Paralleling Stations • Signal cutover must be complete • Short Circuit Tests	Double-track ~ 3 months 200 hours
(5) Integrated Testing Activity ID: TS-04-10000	• Details needed	Double-track ~ 2.5 months 160 hours

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 16 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 26 years' experience in scheduling and claims analysis for railroad and rail transit projects.

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.