

Quarterly Monitoring Report – June 2019

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

July 23, 2019

PMOC Contract Number: DTFT60-14-D-00018
Task Order Number: 005
Project Number: DC-27-5346
Work Order Numbers: 07 and 08
OPs Referenced: 25 - Recurring Oversight and Related Reports
01 - Administrative Conditions and Requirements

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Length of Time Firm Assigned to Project: 3 Years, 11 months
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Executive Summary

A. Project Description

The Project Sponsor is the Peninsula Corridor Joint Powers Board (JPB) which operates rail service as Caltrain. The JPB is responsible for managing and delivering the project.

The Peninsula Corridor Electrification Project (PCEP) corridor is approximately 51 miles in length. This Core Capacity Improvement Project (CC) includes two components: infrastructure and rolling stock. The infrastructure component is comprised of the installation of Traction Power Substations (TPSS) and 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 will be enlarged to accommodate the expanded clearance envelope of the electrified vehicles.

The rolling stock component includes the design and procurement of ninety-six (96) Electric Multiple Unit (EMU) rail vehicles to replace approximately 75 percent of the existing diesel rolling stock. *The initial EMU order was supplemented in December 2018 when the JPB exercised an option to purchase an additional 37 EMUs; the resulting fleet will consist of nineteen (19) seven-car trainsets. The additional 37 EMUs are not part of the JPB's Core Capacity grant.* Caltrain's Central Equipment Maintenance and Operation Facility (CEMOF) will also be 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 is separately installing a Positive Train Control (PTC) system, which is an advanced signal system that includes federally-mandated safety improvements.

The project will be constructed primarily in the existing Caltrain corridor on right-of-way (ROW) controlled by JPB/Caltrain. Additional ROW will be required to accommodate the TPSS and related facilities as well as elements of the OCS system; all ROW transactions will be made in accordance with the Uniform Relocation Act.

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.

B. Project Status

- The project is in construction. The Full Funding Grant Agreement (FFGA) was executed on May 23, 2017; the Final Completion Date is August 22, 2022.
- The JPB, at its February 7, 2019 meeting, approved the award of a contract to ProVen Management, Inc. to modify the Central Equipment Maintenance and Operations Facility (CEMOF) to accommodate the new EMUs. *This is the last of the PCEP's major construction contracts; work is scheduled to start July 29, 2019.*
- *PG&E has begun construction of the improvements at its FMC and East Grand substations to provide permanent power to TPSS #2 and TPSS #1, respectively. PG&E completed the*

substation modifications needed to supply interim power to the TPSS #2 for testing purposes on November 5, 2018. *The Electrification contractor is completing design of the interconnections between the PG&E substations and the two (2) TPSS. Construction of the interconnection to TPSS #2 is scheduled to start in September 2019 and be energized in December 2019.*

- The JPB has procured an additional 37 EMUs from Stadler; this will result in an initial electrified fleet of nineteen (19) seven car trains. This action will delay the delivery of the first complete trainset to the JPB until early 2020 because of the time required to produce and introduce the new seventh car into the first train set.
- *The PMOC conducted its quarterly on-site monitoring visit and meetings on June 3-5, 2019.*

C. Core Accountability Information through April 2019

FFGA Core Accountability Items			
Project Status: In Construction		Original at FFGA	Current Estimate (EAC) ¹
Cost	Cost Estimate	\$ 1,930,670,934	\$ 1,930,670,934
Contingency	Unallocated Contingency	\$162,620,294	\$98,382,595
	Total Contingency (Allocated plus Unallocated)	\$315,533,611	\$194,014,976
Schedule	Final Completion Date	August 22, 2022	August 22, 2022
		Amount (\$)	Percent
Planned Value to Date ²	Total budgeted cost of work scheduled to date ³	\$809,170,477	41.91%
Earned Value to Date	Budgeted cost of work completed to date, i.e., actual total value of work earned or done ³	\$484,076,006	25.07%
Actual Cost ⁴	Total cost of work completed to date (actual total expenditures) ³	\$637,427,459	33.02%
		Amount (\$)	Percent
Contracts	Total contracts awarded to date ⁴	\$1,588,112,197	84.44%
	Total construction contracts awarded to date ⁵ (construction & vehicle contracts only)	\$1,402,449,557	74.57%
	Physical construction work completed ^{6,7} (amount of construction contract work actually completed)	\$434,308,622	30.97%
Major Issue	Status	Comments/Actions/Planned Actions	
<i>Contractor Claim</i>	<i>The Electrification contractor submitted a significant claim, and an associated request for a Change Order in early May 2019, arising</i>	<i>The JPB denied the contractor's claim and the associated request for a Change Order in a letter dated May 28, 2019.</i>	

	<i>out of its efforts to provide Consistent Warning Time at grade crossings.</i>	
Unresolved Schedule Impacts	<i>The JPB recently received a Time Impact Analysis (TIA) from the Electrification contractor 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.</i>	<i>The JPB rejected the contractor's TIA schedule because of a number of significant deficiencies. The JPB's recent Monte Carlo schedule risk assessment projects a potential delay to the FFGA Final Completion Date at the p70 level. The formal report on recent risk updates has not been released.</i>
Technical Capacity and Capability	<i>The System Integration Lead is only part-time and needs assistance. The change to a new Construction Management contractor may have unexpected impacts. Rail Operations has not hired an individual to be responsible for the new fleet of EMU vehicles.</i>	<i>Systems Integration is ranked #5 on the PCEP Risk Register. A lead for the Rail Activation Plan is now in place and is having a positive impact. Initial staff from the new CM contractor has begun to appear on the project.</i>
OCS Construction Progress	<i>Progress continues to be impacted by unexpected in-ground obstacles, resulting in redesign of some pole locations and inefficient foundation construction. 2,572 foundations are required; 864 have been completed to date with 73 completed in May 2019. The work commenced in September 2016 and is now active in all four (4) Segments.</i>	<i>The JPB is meeting weekly with the contractor on the progress of potholing and foundation construction. These efforts have resulted in increased productivity. An all-day meeting was held on June 6, 2019 to focus on foundation work in Segments 3 and 4 and at the CEMOF.</i>
Consistent Warning Time (CWT) for Grade Crossings	<i>The Electrification contractor is moving forward with a dual speed-check solution which apparently will satisfy FRA and CPUC requirements.</i>	<i>The JPB and its contractor met with the FRA and the CPUC on May 30, 2019. The FRA requested a test plan for the new installations. The next meeting is to be held in Sacramento on July 11, 2019.</i>
Systems Integration and Testing	<i>A number of complex Systems Integration issues are currently unresolved, including:</i> <ul style="list-style-type: none"> • Lack of a grade crossing cutover plan. • Potential changes to the communications system. • Potential impacts from the JPB's PTC activities on the cutover of signal and grade crossing systems. 	<i>The JPB holds bi-weekly systems integration meetings which include the contractor and rail operations. The entire Caltrain corridor is now under configuration management for Positive Train Control (PTC) purposes, led by a member of the Rail Operations staff in the JPB's San Carlos office. The PMOC has expressed concerns regarding the apparent lack of a single point of responsibility for systems integration at</i>

	<ul style="list-style-type: none"> • <i>Regeneration of power by the EMUs being fed to PG&E's grid.</i> 	<i>the PCEP level, and continues to recommend additional resources for this vital activity.</i>
Date of Next Monitoring Visit:		<i>TBD – September 2019</i>
Date of Next Quarterly Review Meeting:		<i>July 16, 2019</i>

Core Accountability Table Footnotes:

- ¹ Current estimate is the remaining balance which includes known change orders that will draw from Contingency funds, both Allocated and Unallocated.
- ² Planned Value to Date is based upon the Program Schedule and Estimate (Rev. 4B) that were updated in October 2017 to reflect the FFGA delay.
- ³ Work is defined as construction or manufacturing by Balfour Beatty, Stadler, PG&E, CEMOF, Tunnel Modification, 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 costs and executed change orders.

D. Major Problems and/or Issues

- Two (2) major technical problems, the slow progress on OCS foundation construction, and a confirmed solution to providing Consistent Warning Time (CWT) for grade crossings, have continued to impact the Electrification contract schedule for many months. *The Electrification contractor's most recent Schedule Update Narrative for May 2019 shows a Substantial Completion date of March 3, 2022, compared to the contractual date of August 10, 2020. The PMOC remains concerned that the JPB does not have sufficient scheduling resources to review and analyze the contractor's most recent TIA and the associated claim while providing timely support to other project management activities.*
- *The JPB continues to move forward with its solution to provide Consistent Warning Time at grade crossings following electrification of the project. The JPB and its contractor met with the Federal Railroad Administration (FRA) and the California Public Utilities Commission (CPUC) on May 30, 2019. The FRA requested a test plan for the new installations. The next meeting will be held in Sacramento on July 11, 2019. The JPB has authorized the contractor to proceed with design of all the crossings using this approach.*
- *The JPB selected Jacobs Project Management Company (Jacobs) as the new construction management (CM) contractor to replace Gannett Fleming's construction management (CM) personnel. A few key members of the Jacobs team are now on-site while the JPB continues to negotiate the final staffing for the project. The PMOC has suggested that the JPB develop a transition strategy in the event that there are a significant number of departures from the current CM group.*
- *Construction of the Overhead Contact System (OCS) is far behind initial projections due to encountering numerous unanticipated obstructions in planned pole locations. Foundation construction, which controls the ultimate pace of the program, has recently improved due to the loosening of restrictions on work in adjacent work areas, as well as a more focused approach by the JPB involving small group meetings on specific topics aimed at facilitating prompt action. Erection of catenary poles has resumed following a several month's shutdown by the contractor to allow an adequate number of foundations to be placed so that pole erection can proceed continuously.*

- The PMOC is concerned that procedures and processes have not been instituted to verify that the train clearance envelopes are preserved during the construction phase of the project, nor is there an intermediate catenary and appurtenance maintenance plan in place to ensure that a catenary component does not come loose and create a clearance issue. This issue has been brought to the Sponsor's attention on several occasions.
- The JPB established a system to reconcile responsibility for track access delays and compute the associated costs. The prompt reconciliation and resolution of track access delays and the resulting costs continues to be a challenge. The JPB has not reconciled any track access delay costs for 2018, but the unreconciled numbers keeps rising. *The JPB/BBII new goal is to finalize all costs through the end of 2018 by September 30, 2019.* The JPB's funding partners expressed their displeasure with the lack of progress on this issue, and representatives from the California High Speed Rail have offered their assistance to improve the situation.
- *The PMOC understands that the JPB's Rail Operations group will be imposing a moratorium on changes to the current signal system as the group prepares for a Revenue Service Demonstration of the PTC system. The PMOC is uncertain what impact this moratorium will have on the already delayed signal programs, particularly the grade crossing warning system.* The JPB reports that testing of the PTC system, which is now in progress, is having negligible impact on the Electrification contractor's use of the tracks during the contractually established work windows.
- The PCEP team is still acquiring the real estate needed for the project. The refinement of the design for the overhead contact system (OCS) as a result of pole shifts, and some modifications to the traction power system (TPS) has resulted in the creation of some new parcels and modifications of other parcels. Timely acquisition of ROW has recently been elevated to medium on the PCEP's risk register.
- Pacific Gas & Electric (PG&E) must modify two (2) existing electrical sub-stations to provide the power necessary to operate the electrified rail system. *Construction of the modifications is now underway. There is currently no agreement on the allocation of costs for the modifications between the JPB and PG&E, and the JPB has initiated a contested case action with the regulatory authorities in an effort to gain certainty on these costs.*
- *The JPB is moving forward with its plan to reduce the required 110 mph trainset performance test to 95 mph for all but the first trainset. The JPB has also decided to test the first trainset at the Transportation Technology Center, Inc. (TTCI) in Pueblo, CO.*

E. Monitoring Plan Items

- *The PMOC has focused its attention during recent visits on the JPB's need to expand the resources being applied to the most significant technical issues and identifying someone to lead the management of these issues. The PCEP team has responded positively to the PMOC's suggestions and these efforts appear to be improving effectiveness.*
- The PMOC plans to increase its focus on the PCEP's schedule performance, including the JPB's mitigation of delays to OCS foundation installation, implementation of the dual speed check solution to provide the required Consistent Warning Time at grade crossings, and completion of Time Impact Analyses related to the previous two (2) issues. *The PMOC will apply additional resources when a definitive schedule and/or an acceptable TIA is available*

from the JPB. The PMOC continues to recommend that the JPB explore various schedule scenarios in an effort to understand the potential range of impacts.

- *The PMOC will continue to monitor PCEP staffing levels, in light of the upcoming change to a new Construction Management contractor which will replace the Gannett Fleming staff currently performing these services.*
- *The PMOC will continue to monitor the JPB's Systems Integration activities and the development of its Rail Activation Plan (RAP). The appointment of a Rail Activation lead should greatly improve progress on the RAP, which has paused until recently.*
- *The JPB provided an update to its Project Management Plan (PMP) and several sub-plans on May 17, 2019; the updates were originally expected in early 2019. The PMOC will commence review of these materials in the near future.*

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3) **Significant PMOC Observations**

This monitoring report covers the period from May 2, 2019 through June 5, 2019. Quarterly Progress Review Meeting (QPRM) No. 10 did not occur as scheduled on April 17, 2019, and the FTA requested that the PMOC conduct an on-site visit on April 29 -May 1, 2019 to update the FTA on the progress of the project. The results of the PMOC's visit are documented in meeting notes dated May 23, 2019. This report contains information obtained during the on-site monitoring visit June 3-5, 2019, meeting attendance, document reviews, telephone conversations and general interaction with the project sponsor's personnel.

A. Project Status

Environmental Process

The JPB previously relocated Paralleling Station No. 2 (PS-2) to a site controlled by the JPB. The JPB learned recently that the planned site for PS-3 conflicts with a future Caltrain/City of Burlingame grade separation project and that PS-3 must be relocated. The JPB and the City of Burlingame have agreed on a new location for PS-3 and the JPB completed the environmental documentation to support this action. The JPB approved Amendments 3 and 4 to its Environmental Baseline Report for the PCEP at its August 2, 2018 meeting. *The JPB submitted a single package detailing its environmental re-evaluation of the relocation of both PS-2 and PS-3 to the FTA for review on March 19, 2019.*

Support Services and Design

The JPB awarded contracts in early 2014 for Program Management Consultant Services; EMU Vehicle Consultant Services; and Electrification Services. The scope and status of work for each of the consultant contracts is described as follows:

Program Management: The consultant team provides various program management support services such as document control, project controls including estimating and scheduling, quality assurance, risk management and contract administration during implementation of the PCEP.

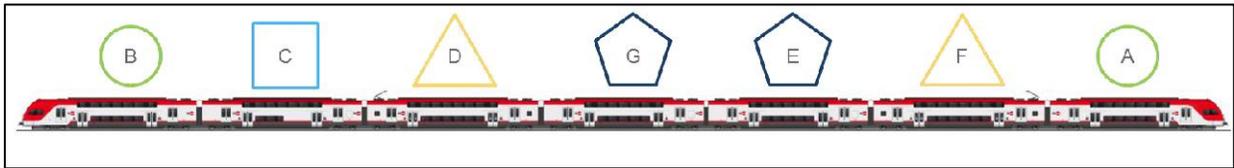
EMU Services: The consultant team provides EMU management and oversight support services which included development of the vehicle procurement documents, and now encompasses vehicle design reviews, vehicle-related Buy America compliance services, monitoring and inspection during vehicle manufacture/assembly, integration of on-board systems with the JPB's PTC Project, design of modifications to the CEMOF; and support during the delivery, testing and commissioning of the EMUs.

The EMU Services team is currently working on the following tasks:

- *Updating the PCEP's Quality Management Plan (QMP) to conform it to quality assurance activities being performed on the EMUs.*
- *Support development of the plan for testing the initial EMU trainset at the U. S. Department of Transportation's (USDOT's) facility in Pueblo, CO.*
- *Preparing for initiation of work on the CEMOF. The design team, a subconsultant to the EMU services consultant, will provide design support during construction (DSDC) for the CEMOF modifications. Construction work is now expected to start on July 29, 2019.*

- Continued support for the procurement of a total of 133 EMUs, consisting of the initial order of 96 EMUs and an additional 37 EMUs under a pre-existing option in the Stadler contract.
- Final Design reviews of the EMU are mostly complete, and the Design Packages are being finalized. The software intensive system Final Design Reviews are scheduled for the end of 2019. Additional reviews will be required for the new “G” car, which although very similar to the “E” car, has some slight differences. Both the “E” and “G” cars have powered trucks, unlike the “C” and “F” cars which are unpowered. [PMOC note: The letter designation identifies the position of the particular car type in the train set as shown in Figure 1 below.]

Figure 1 – EMU Trainset Car Type Designations



- Monitoring vehicle manufacturing and testing activities.
- Continue to support the JPB in discussions with the FRA on EMU compliance issues.
- Continue to address systemwide interface issues involving the emerging EMU design, existing Caltrain wayside infrastructure, Electrification Project designs, and the Caltrain PTC Program.
- Assist in developing sequencing workaround solutions to address the current gap between EMU initial deliveries and availability of electrified track for EMU testing.

Electrification Services: The consultant provides management and oversight support services which included development of the procurement documents and participation in negotiation of the design-build contract. The consultant now provides design reviews and monitoring, and support of manufacture/assembly of products, construction, installation, integrated testing, and commissioning related to overhead catenary systems, traction power substations, communications, supervisory control and data acquisition (SCADA), rail signaling, and train controls. *The Electrification Services team also provided design support during construction (DSDC) for the Tunnel Notching contract and will resume that role when work to install the OCS in the tunnel resumes in fall 2019.*

The Electrification Services team is currently working on the following activities:

- Providing design oversight and direction to the Balfour-Beatty Infrastructure, Inc. (BBII) team.
- Continued to support the JPB in various ways related to resolution of the Constant Warning Time issue at grade crossings. *These activities include interaction with BBII, the Union Pacific Railroad (UPRR), FRA and the CPUC.* The CWT issue, which now appears to be resolved, has impacted BBII’s schedule for signal system design and installation.
- Supporting discussions and negotiations with BBII related to various change orders.

- Monitoring and reporting on BBII's field activities including tree-trimming, pot-holing of OCS pole locations, OCS foundation construction, OCS pole erection, and traction power substation construction. *Construction management activities by the Electrification Services team is nearing an end with the selection of Jacobs Project Management Company as the new CM contractor and the appearance of the first Jacobs' employees at the PCEP.*
- Participating in weekly meetings with the JPB's PTC management team.
- Providing oversight and direction to Aeronautical Radio, Incorporated, (ARINC), the SCADA supplier.
- Providing technical direction, as needed, to BBII related to PG&E's design of temporary and permanent power connections to the traction power system.
- Supporting the JPB's staff in identifying utilities located within the corridor and working with the utilities to develop relocation plans, as necessary.
- Reviewing submittals and other materials prepared by BBII and ARINC.
- Reviewing submittals and other materials prepared by ProVen, the tunnel notching contractor.

Concurrent Non-Project Activities:

The JPB has an on-going capital construction program that includes several projects that will share some common elements with the PCEP. These projects have been designated as Concurrent Non-Project Activities (CNPAs), and the project elements that will be constructed for the benefit of the PCEP will be appropriately segregated for cost purposes. The JPB has identified the following CNPAs:

- Design of the relocation of PS-3 in Burlingame to avoid a future conflict with the Broadway Grade Separation Project (BGSP). The BGSP will pay for the cost of this PCEP work.
- Drainage improvements for tunnels 1 and 4 in Segment 1: This work is included in the Tunnel Notching and Drainage Improvements contract awarded to ProVen, as noted above. *The drainage improvements are complete, following completion of the tunnel notching in the respective tunnels.* The JPB is also replacing sections of track within Tunnels 1, 2, and 4. *Additional notching continues in tunnels 1 and 4 due to insufficient clearance following a recent survey.*
- OCS foundations, as part of the South San Francisco Station construction in Segment 2: *This work is in construction and the PCEP work is scheduled for completion in October 2019.*
- OCS foundations, as part of the 25th Avenue Grade Separation Project in San Mateo: *This work is in construction and the PCEP work is scheduled for completion in December 2019.*
- OCS foundations, as part of the Los Gatos Bridge project in Segment 4: This work is complete.
- Trackwork on the Santa Clara Drill Track in Segment 4. This work was originally planned to be done under the Los Gatos Bridge Project, but that did not occur. The JPB has decided to have the work performed by Transit America Services, Inc. (TASI), Caltrain's contract rail operator.

- New Control Point at CP Brittan in Segment 2: *This work has been cancelled. The CNPA work was limited to supply of a new signal house by the Electrification contractor for the JPB's project.*

Value Engineering (VE):

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.

Procurement – Executed Contracts and Changes

The following contracts comprise the majority of the PCEP scope. No additional construction contracts are planned following the recent award of the CEMOF Modification contract.

Electrification: The electrification of the corridor is being performed using a design-build contract which was awarded to Balfour-Beatty Infrastructure, Inc. (BBII) and executed on August 15, 2016. The JPB issued a full NTP to BBII on June 19, 2017.

Electrification Contract Changes: The JPB reported issuing Change Orders (COs) to BBII in the amount of \$1,659,611 since January 2019. The COs cover design of the relocation of PS-5; Segment 1 Design and Pothole Training; Daytime Potholing – Segment 4; and 2018 Incentives (Safety, Quality, and Community Outreach). Many of these COs are for agreed upon amounts based on typical conditions encountered in the field. This approach was adopted to reduce the administrative burden related to numerous occurrences of similar circumstances. The PMOC has done cursory reviews of various COs, but has not reviewed any of the supporting documentation.

Additional change orders are being processed to address differing site conditions encountered in the field, track access delays and other changes.

EMU Vehicles: The 96 EMUs are being supplied by Stadler US under a contract that was executed on August 15, 2016. The JPB issued a full NTP to Stadler on June 1, 2017. Design of the vehicles is being performed in Switzerland and final assembly of the vehicles will occur at a location near Salt Lake City, Utah.

EMU Contract Changes:

- The JPB issued a CO to Stadler in the amount of \$172,800,047 in December 2018 for the purchase of thirty-four (34) additional rail cars under an option in the existing contract. The JPB also issued a no cost CO to Stadler to cover the change to the Wabtec PTC system from the original Communications Based Overlay Signal System-Positive Train Control (CBOSS-PTC) system. *A CO is being processed for testing of the first EMU trainset in Pueblo, CO.*

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 will be 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 are being performed as a Concurrent Non-Project Activity (CNPA) that will be paid for by Caltrain. The JPB issued a Notice to Proceed to the contractor on October 6, 2018.

The tunnel notching contract included an option for installation of the Overhead Contact System (OCS) in the tunnel bores. The pricing of this work by the single bidder, ProVen Management, Inc., was significantly higher than the Engineer's Estimate, and the work was not awarded as part of the contract. The JPB concluded negotiations with ProVen and the Board approved award of a \$16.6 million CO at its November 2018 meeting. A CO was required because the JPB did not exercise the OCS option when it issued the original tunnel contract.

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 will be 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 Limited Notice to Proceed (LNTP) with non-construction activities on April 29, 2019; a full NTP is expected to be issued on July 29, 2019. The CEMOF contract is the last of the PCEP's major construction contracts.

Consultant Contracts: *The JPB is currently developing work directives for its pre-existing consultant contracts for the FY 2020 period, and reports that it is still in negotiations with Jacobs for its initial CM work directive.*

On-call Construction Management Services for the PCEP: The JPB solicited proposals for On-call Construction Management Services to support electrification construction, the recently awarded 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. Proposals were received on September 20, 2018. *The JPB approved award of a \$17 million, five-year contract to Jacobs Project Management Company (Jacobs) of Oakland, CA, at its April meeting. Jacobs will also perform the construction management activities that are currently being performed by Gannett Fleming under its Electrification Services contract.*

Upcoming Procurements: *The JPB has not identified any future contracts at this time. Award of the CEMOF Modifications contract to ProVen and the On-call Construction Management Services to Jacobs completes the major contracts for the PCEP.*

Project Delivery

Electrification Design-Build Contract

Design and Design-related Activity: Balfour-Beatty Infrastructure, Inc. (BBII) is responsible for the Final Design 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. Work was initiated following the JPB's issuance of an LNTP on September 6, 2016, which was followed by issuance of a full NTP to BBII on June 19, 2017. The following design and design-related activities are currently under way:

- Preparation of contractually required plans and submittals.
- Advancing OCS and Traction Power System (TPS) design in all Segments.
- Work continues to address Caltrans' requirements for bridge protection barriers.
- *The Electrification contractor has proposed a dual speed checks solution to provide CWT at grade crossings. This solution has been agreed to by the JPB, the UPRR, the FRA and the CPUC, subject to verification of its effectiveness. The most recent meeting was held on May 30, 2019 at which time the FRA requested a test plan to demonstrate the system's effectiveness. A follow-up meeting is scheduled for July 11, 2019 in Sacramento. The JPB has authorized the contractor to proceed with design of all the crossings using this approach. The JPB recently initiated weekly meetings with the contractor, similar to the weekly pothole/foundation meeting, in an effort to improve the overall performance of this critical activity.*
- *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 contractor submitted a delay claim on behalf of its signals' subcontractor; the material submitted stated in part "[a]t this juncture MRS estimates that the cost associated with this issue, to include but not limited to, indirect cost, direct cost, materials, escalation, contingency, risk, and delays is \$76,223,166. 64, which includes 1,092 days in delay costs associated with the project duration being extended." Shortly thereafter, the Electrification contractor submitted its TIA for the delays associated with the CWT issue. The transmittal letter for the TIA presented a Change Order Cost Proposal in the amount of \$239,550,209.54 consisting of \$71,882,763.92 in Direct Costs and \$167,667,445.62 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.] 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 and has also rejected the TIA for lack of sufficient detailed information.*
- Potholing of OCS foundation locations is now active in all Segments. Potholing continues to encounter a significant number of differing site conditions, which slow progress. The JPB's Construction Management team continues to issue Field Orders to remove the obstacles and compensate the contractor for the impact of these conditions. Potholing is

required for OCS poles, traction power facilities, and signal ductbank and wayside power cabinets (WPCs). The JPB is now holding weekly meetings with the Electrification contractor, focused specifically on potholing and utility location and relocation activities. *The PCEP team and the contractor have developed various check lists and reports to assist them in this activity.* A significant amount of potholing activity remains despite the large number of potholes already completed.

- Design of the 115kV interconnection with PG&E at the TPSS-2 location continues. The Santa Clara Valley Transportation Authority (VTA) previously identified a conflict between a proposed pole location and a Bay Area Rapid Transit District (BART) substation. *This conflict has apparently been resolved, although some details remain to be finalized.*
- 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. This wire is slightly different in dimension than the wire specified in the contract. The JPB reviewed the request in 2017, but never took the formal action required to approve the request. The JPB recently rejected the DVR. The contractor requested reconsideration of the rejection, which has been denied. *The contractor does not agree with the JPB's position on this matter and the issue may be escalated for resolution. The JPB is reviewing the design impacts of this decision.*
- *The PMOC understands that the JPB's Rail Operations group will be imposing a moratorium on changes to the current signal system as the group prepares for Revenue Service Demonstration of the PTC system in early fall of 2019. The PMOC is uncertain what impact this moratorium will have on the already delayed signal programs, particularly the grade crossing warning system.*

Construction Activity: The JPB provided the following report on construction activity. *Table 1 below presents the status of construction of OCS foundations and erection of OCS poles in the different Segments and Work Areas:*

- *Continued to install OCS foundations in Segment 4. Work in this Segment has been slower than anticipated because of the extensive trackwork and congested nature of the corridor in that area and presence of significant industrial activity which has limited options for locating and/or relocating foundations.*
- *Continued fabrication of OCS cantilevers and brackets in the contractor's South San Francisco warehouse.*
- *Continued to install OCS cantilever arms, insulators, brackets, down guys, and balance weights in Segment 2.*
- *Installed disconnect switches at Control Point (CP) Trousdale, CP Sierra, CP Scott, and CP Center in Segment 2.*
- *Completed all drainage work and continued to install foundations at TPS-2.*
- *Continued to install ductbank and install foundations for gantry structures and electrical gear at TPS-1.*
- *Continued to install ductbank, 25 kV enclosures to manholes, and set transformers at PS-7.*
- *Installed 10 megavolt amp transformers at SWS-1.*

- Continued to install signal ductbank and conduits in Segment 4 and 2 at CP Mack, CP Michael, Auzeais Crossing, CP De La Cruz, and CP Palm.
- Continued to installed impedance bonds in Segments 1, 2, 3, and 4.
- The JPB and BBII are holding Executive Partnering meetings in an effort to improve overall progress and reduce conflicts related to the project; these meetings are in addition to the regular partnering meetings. *The most recent session was held the week of May 27, 2019.*

Table 1 – OCS Construction Progress (May 31, 2019)

Segment	Work Area	Foundations			Poles		
		Required ^{1,2}	5/1-5/31	to Date	Required ²	5/1-5/31	to Date
1	Tunnels	34	0	34	31	0	0
	A	309	0	0	259	0	0
	B	237	0	0	177	0	0
2	5	234	0	184	180	0	160
	4	317	5	243	258	16	186
	3	110	0	60	85	20	20
	2	248	0	74	205	0	0
	1	206	0	78	154	0	0
3	2	530	0	0	460	0	0
	I	397	49	49	313	0	0
4	A	244	13	72	180	0	0
	B	140	6	70	124	0	0
	CEMOF	112	0	0	102	0	0
Total		3118	73	864	2528	36	366
¹ Foundations required do not match poles required as guy foundations are needed in some locations for extra support.							
² The number of required poles and foundations fluctuate due to design changes.							

SCADA Contract

- Completed remote power terminal development.
- Completed the implementation of clearance and other-feature development.
- Began unit testing.
- Began work on white paper to describe platform clearance changes since the design review.
- Continue to modify the database reflecting design drawings and information from the Points List.
- Begin Point to Point Test activities.
- Delivery of test procedures (as these unit tests are completed).
 - **PMOC Observations:** The PMOC was pleased to learn that PTC testing being conducted by Rail Operations has not interfered with track access for the Electrification contractor. However, the significant cost of track access delays incurred by the PCEP during the fourth quarter 2017 and throughout 2018 is a continuing concern; this concern is shared by the Change Management Board. The resumption of foundation construction by the Electrification contractor means that more crews will be moving about the tracks during non-revenue periods, increasing the likelihood of delays with higher costs per delay as crew

sizes increase. The following table shows the amount of track access delay incurred and the associated cost of delay. **Note that the responsibility for the delay, and therefore, the resulting cost to the project, is unreconciled for all periods in 2018, and the cost of delay is unreconciled for 2017-Q4.**

Table 2 – Potential Track Access Delay and Cost

Period	Track Access Delay Time (Hrs:Min)	Potential Track Access Delay Cost	Forecast for Reconciliation
2017-Q4	277:04	\$909,510	N/A
2018-Q1	299:05	\$1,326,270	Mid-June 2019
2018-Q2	277:40	\$1,108,388	Mid-July 2019
2018-Q3	421:00	\$765,000	Late Aug 2019
2018-Q4	441:00	\$1,495,000	Late Sept 2019

- *The JPB reports that it is working with Operations and TASI to look at both front end and back end track access delays (TADs). This review has reduced front end delay from previous 40 - 50% to 12% in March 2019 and reduced back end delay from previous 20 - 30% to 16% in March 2019. The PCEP expects that the change to the adjacent track work rule will further reduce TADs, which should appear in April 2019.*
- *The JPB continues to struggle with Track Access reconciliation issues. BBII has recently proposed, and the JPB has adopted a short notice work window request form. This form allows BBII, once it is approved by the JPB, to re-sequence previously planned work. The PMOC is concerned that this process will further complicate the reconciliation of track access delays and increase the potential for delay claims by BBII. The California High-Speed Rail Authority (CHSRA) representatives, serving as members of the Change Management Board (CMB), have offered to review the JPB’s track access processes and procedures to help improve track access and reduce delays and impacts. The JPB reported that it met with the CHSRA representatives on May 1, 2019 to discuss the topic; however, no further information on the results of the meeting was provided.*

PMOC Recommendation: The JPB states that it is tracking and segregating the extra costs incurred to relocate foundations or otherwise avoid or relocate the fiber optic cable installed by the CBOSS-PTC contractor. *The PMOC notes that this information is being captured in the Change Order logs being maintained by the JPB and reviewed by the CMB.* The JPB should produce a report documenting the sources of funds used for the original installation of the CBOSS-PTC cabling, and documenting the costs incurred to date by the PCEP as described above. The report should also document any specifications or other technical direction previously given to the CBOSS-PTC contractor that required that the contractor avoid the areas and locations where the interferences have, or in the future occur. The JPB should consider initiating a back charge or other action to recover its extra costs as additional information

- is gathered. The PMOC notes that the FTA will not participate in costs associated with remediating the CBOSS-PTC fiber optic conflicts.
- The PMOC suggested that the PCEP Construction Management (CM) team consider holding a partnering session with the Operations staff, including dispatchers, in an effort to improve understanding between the teams. *The JPB reported that it has held meetings with Rail Operations and that Robert Sebez, the lead for the RAP, is having a positive impact on this issue.*
 - The PMOC suggests that the Electrification CM team refer to the track sheets kept by Rail Operations to make the final determination regarding the underlying cause of track access delays.

Real Estate Acquisition

Background Information

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 more effectively manage the electrification and other related work (See Appendix C).

The corridor spans three 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 3 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 as a result of late delivery of required real estate. The real estate team has recently completed, or is conducting the following activities:

- *Continue to negotiate a settlement with Willowbend Apartments, with intention of obtaining Possession and Use Agreement. (Segment 3)*
- *Staff reviewing potential new pole locations and providing feedback to the design team.*
- *Working with property owners for Segment 4 to enable potholing.*
- *Facilitated access to Central Concrete for potholing (Segment 4).*
- *Working with PG&E Legal to expedite early access for potholing.*
- *Working with UPRR on encroachment permit and/or easement.*
- *Worked with relocation to review claims for Loop Transportation (Segment 4).*
- *Continue to negotiate for all open parcels.*
- *Appraisal underway for a parcel in the city of Belmont (Segment 2).*
- *Commenced appraisal for Diridon Hospitality (Segment 4).*
- *Continue to work with Segment 4 owners for early access to pothole.*
- *Make offers on the parcel for which appraisals have been completed.*
- *Actively participate in Foundation/Pothole weekly meeting.*
- *Continue to work with project team to identify and analyze new potential parcels.*
- *Map newly identified parcels.*

Status of Real Estate Activities

The status of real estate activity is presented in Table 3 below.

Table 3 – Real Estate Status (3-1-2019)

Segment	No. of Parcels Needed ¹	Appraisals Completed	Acquisition Status	
			Escrow Closed	Parcel Possession ¹
1	7 ³	7	0	0
2	27	26	23	25
3	10	10	7	8
4	8 ²	8	1	3
Additional Parcels	9	1	0	2
TOTAL	61	52	31	38

Notes:

1. Possession obtained either through acquisition of parcel, possession date in contract or Order for Possession through condemnation action.
2. Four (4) of the Segment 4 parcels are owned by PG&E.
3. All seven (7) parcels are owned by a single entity.

- **PMOC Observations:** The progress of real estate acquisition continues to be slower than anticipated. The PMOC expects that the Electrification contractor may request compensation for some delays associated with the late delivery of real estate parcels.
- The continued appearance of new parcels as a result of shifts in the placement of OCS poles is problematic if possession is needed before foundations can be constructed. The PMOC understands that BBII's designers are attempting to avoid or minimize such situations.
- The JPB identified the need for an alternate location for Paralleling Station #3 (PS-3) at its Burlingame Station site in Segment 2. The initial location conflicted with a future grade separation of the Broadway crossing. A new location has been agreed to with the City of Burlingame and environmental clearance documents have been prepared and submitted to the FTA for the site.

Third-party Agreements and Coordination

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 CCSF has 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:

- Completed relocation of Verizon's parallel aerial facilities.
- Coordinated relocation by communication cable owners such as AT&T and Comcast.
- Continued PG&E relocations in all Segments.
- Continued relocation of SVP facilities in Segment 3.

- The VTA is constructing a traction power substation to provide power to a BART extension. The VTA identified a conflict between its TPSS and a pole location needed for the interconnection between PG&E and PCEP's TPSS #2. *Although the JPB reports that this issue has been resolved, final details are still being confirmed and coordination with the VTA continues.*
 - **PMOC Observation:** The JPB continues to coordinate closely with the various utility companies, especially on near term conflicts with construction activities. It appears that the number of utility conflicts within the corridor was underestimated, and the clearance process is more complicated and time consuming than previously anticipated.

The JPB is also 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. *There is currently no agreement on the allocation of costs for the modifications between the JPB and PG&E. The JPB has initiated a contested case action with the regulatory authorities in an effort to gain certainty on these costs.*

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 has also started permanent modifications to both its FMC and East Grand Substations. Design of the interconnections between PG&E's FMC substation and TPSS #2 and PG&E's East Grand substation and TPSS #1 is underway by the PCEP's Electrification contractor using a PG&E approved design consultant. Similarly, construction of the interconnects will be performed by the Electrification contractor, using a PG&E approved sub-contractor.* 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 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 providing Consistent Warning Time (CWT) 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 dual speed checks to provide CWT at grade crossings between the PCEP team, Caltrain's Rail Operations, the Electrification contractor, the UPRR and the FRA. This agreement is subject to demonstrated safe operation of the crossings. The PCEP's Electrification contractor is preparing a test plan for submission to the FRA. A meeting with the FRA and CPUC was held on May 30, 2019 and a follow-up meeting to present the contractor's test plan is set for July 11, 2019. The JPB will be filing General Order (GO) 88B forms for each modified crossing for approval by the CPUC. 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 UPRR imposed an increased lateral clearance requirement of 15 ft. between its MT-1 (northbound) track in Segment 4 of the corridor and some of the planned OCS pole locations. The typical clearance for railroad tracks is 8 ft. 6 in. The PCEP team reports that it continues to have difficulty in resolving the final locations of the remaining poles with UPRR and is working with the railroad to resolve the remaining conflicts.

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 CWT, 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; that 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 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 reported that it is moving 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 EA. This documentation will be shared with the FTA. All costs associated with the pole relocation work will be paid for by the CHSRA. The JPB adopted the Final Environmental Impact Report (FEIR) Addendum #2: Inclusion of Overhead Contact System (OCS) pole and wire relocations to accommodate California High Speed Rail Authority (CHSRA) Service, at

its October 5, 2017 meeting. The FTA recently approved the National Environmental Policy Act (NEPA) Re-evaluation documentation of this project change.

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 J of this report. The JPB continues to hold monthly conference calls with the FRA to discuss PTC progress and any related issues.

B. Project Management Plan (PMP) and Sub-Plans

The JPB stated that it planned to update its Program Management Plan (PMP) in late 2018; *the PMOC received an updated PMP and several sub-plans and procedures on May 17, 2019. The PMOC will commence reviews on the updated documents in the near future.* The PMOC conducted an on-site audit of the PCEP's Quality programs in November 2018. *Resolution of the issues identified during that visit are underway.* The PMOC has been encouraging the JPB to initiate work on its Rail Activation Plan; *a reconstituted Rail Activation Committee (RAC) resumed meeting in April 2019 and is developing a schedule and producing the details of the plan.* The plan must be in place before testing of the new EMU's can begin.

C. Project Management Capacity and Capability

The JPB reported the following recent changes to its organization and that of the PCEP:

- *Robert Sebez has joined the JPB's Rail Operations group and is leading preparation of the Rail Activation Plan. He is also assisting the PCEP effort to reduce track access delays.*
- *The JPB has hired Aaron Lamb as the PTC Configuration Manager.*
- *Brian Holt, a signals engineer, has replaced Jim Mulhern on the project controls team to focus on the costs associated with CWT.*
- *Jacobs Project Management Company has joined the PCEP as the construction management (CM) consultant, replacing the Gannett Fleming personnel that were performing that function. The Jacobs' team is currently building its PCEP staff.*

The most recent PCEP organization chart is attached as Appendix D.

- **PMOC Observations:** *The transition to Jacobs as the CM contractor is not complete and the PMOC remains concerned that adequate field staff will be available to provide the necessary oversight and record keeping.*
- *The JPB reports that its backlog of Requests for Information (RFIs) and other submittals has been reduced.*
- **PMOC Recommendations:** The PMOC recommends that the JPB continue to monitor its backlog of RFIs, Change Notices, submittals and other contractual documentation and increase office and field staff as appropriate to maintain the appropriate records and turn documents around as required by contract.

D. Project Cost

Table 4 below presents the PCEP cost estimate, dated November 16, 2016, as the estimate was revised and incorporated into the FFGA. The JPB is re-forecasting the estimated cost at completion (EAC) monthly, and the current information has been added to Table 4 for ease of comparison. The JPB now expects to re-baseline its Capital Cost Estimate in mid-2019 after it assesses the cost impact of the current delays to the Electrification contract, following the completion of the necessary TIAs, and completes its Monte Carlo risk assessment update to inform the contingency requirements.

Table 4 – Project Cost

STANDARD COST CATEGORY	Base Year Dollars w/o Contingency	Base Year Dollars Allocated Contingency	Base Year Dollars TOTAL	YOE Dollars TOTAL	4-30-2019 Estimate at Completion Dollars
10 GUIDEWAY & TRACK ELEMENTS (51 route miles)	9,930,050	3,443,415	13,373,465	14,256,739	28,074,129
20 STATIONS, STOPS, TERMINALS, INTERMODAL (NONE)	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	1,727,666	396,732	2,124,398	2,265,200	7,050,777
40 SITEWORK & SPECIAL CONDITIONS	197,354,697	42,465,878	239,820,575	255,072,402	262,751,916
50 SYSTEMS	429,641,995	46,687,882	476,329,877	504,445,419	532,306,531
60 ROW, LAND, EXISTING IMPROVEMENTS	26,526,146	8,447,380	34,973,526	35,675,084	35,675,084
70 VEHICLES (96)	564,044,890	8,364,433	572,409,323	625,544,147	625,755,807
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	279,886,974	29,338,981	309,225,955	323,793,010	333,675,457
90 UNALLOCATED CONTINGENCY			150,353,131	162,620,295	98,382,596
100 FINANCE CHARGES			6,600,802	6,998,638	6,998,638
Total Project Cost (10 - 100)			1,805,211,052	1,930,670,934	1,930,670,935

Note: Totals may not add due to rounding.

Project Expenditures

The status of the PCEP budget and expenditures through April 30, 2019, in SCC format, is shown on Table 5.

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.

Table 5 – Project Expenditures in SCC Format (4-30-2019)

Description of Work	Approved Budget (A)	Cost This Month (B)	Cost To Date (C)	Estimate To Complete (D)	Estimate At Completion (E) = (C) + (D)
10 - GUIDEWAY & TRACK ELEMENTS	\$27,951,393	\$575,702	\$22,723,291	\$5,350,837	\$28,074,129
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	\$2,500,000	\$0	\$0	\$2,500,000	\$2,500,000
10.07 Guideway: Underground tunnel	\$25,451,393	\$575,702	\$22,723,291	\$2,750,837	\$25,474,128
10.07 Allocated Contingency	\$0	\$0	\$0	\$0	\$0
30 - SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	\$7,050,777	\$0	\$0	\$7,050,777	\$7,050,777
30.03 Heavy Maintenance Facility	\$6,550,777	\$0	\$0	\$6,550,777	\$6,550,777
30.03 Allocated Contingency	\$0	\$0	\$0	\$0	\$0
30.05 Yard and Yard Track	\$500,000	\$0	\$0	\$500,000	\$500,000
40 - SITEWORK & SPECIAL CONDITIONS	\$267,024,916	\$10,086,165	\$112,166,830	\$150,585,086	\$262,751,916
40.01 Demolition, Clearing, Earthwork	\$3,077,683	\$180,000	\$2,881,000	\$196,683	\$3,077,683
40.02 Site Utilities, Utility Relocation	\$92,728,599	\$8,585,040	\$42,270,942	\$46,184,657	\$88,455,599
40.02 Allocated Contingency	(\$0)	\$0	\$0	(\$0)	(\$0)
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	\$2,200,000	\$80,503	\$2,631,486	(\$431,486)	\$2,200,000
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks	\$32,679,205	\$75,375	\$1,280,045	\$31,399,163	\$32,679,208
40.05 Site structures including retaining walls, sound walls	\$568,188	\$0	\$0	\$568,188	\$568,188
40.06 Pedestrian / bike access and accommodation, landscaping	\$764,933	\$0	\$0	\$764,933	\$764,933
40.07 Automobile, bus, van accessways including roads, parking lots	\$284,094	\$0	\$0	\$284,094	\$284,094
40.08 Temporary Facilities and other indirect costs during construction	\$114,237,209	\$1,164,246	\$63,103,357	\$51,333,851	\$114,437,209
40.08 Allocated Contingency	\$20,485,000	\$0	\$0	\$20,285,000	\$20,285,000
50 - SYSTEMS	\$519,533,064	\$4,730,824	\$72,227,946	\$460,078,585	\$532,306,531
50.01 Train control and signals	\$99,483,666	\$82,961	\$9,821,790	\$89,661,875	\$99,483,666
50.01 Allocated Contingency	\$0	\$0	\$0	\$0	\$0
50.02 Traffic signals and crossing protection	\$23,879,905	\$0	\$0	\$23,879,905	\$23,879,905
50.02 Allocated Contingency	\$1,140,000	\$0	\$0	\$1,140,000	\$1,140,000
50.03 Traction power supply: substations	\$70,984,821	\$1,966,772	\$18,575,350	\$71,590,999	\$90,166,348
50.03 Allocated Contingency	\$28,150,861	\$0	\$0	\$27,941,351	\$27,941,351
50.04 Traction power distribution: catenary and third rail	\$271,974,423	\$2,681,092	\$43,830,806	\$230,665,923	\$274,496,723
50.04 Allocated Contingency	\$16,356,081	\$0	\$0	\$7,635,230	\$7,635,230
50.05 Communications	\$5,455,000	\$0	\$0	\$5,455,000	\$5,455,000
50.07 Central Control	\$2,090,298	\$0	\$0	\$2,090,298	\$2,090,298
50.07 Allocated Contingency	\$18,000	\$0	\$0	\$18,000	\$18,000
60 - ROW, LAND, EXISTING IMPROVEMENTS	\$35,675,084	\$142,945	\$15,842,963	\$19,832,121	\$35,675,084
60.01 Purchase or lease of real estate	\$25,927,074	\$92,943	\$15,714,389	\$10,212,685	\$25,927,074
60.01 Allocated Contingency	\$8,748,011	\$0	\$0	\$8,748,011	\$8,748,011
60.02 Relocation of existing households and businesses	\$1,000,000	\$50,000	\$128,574	\$871,426	\$1,000,000
70 - VEHICLES (96)	\$625,755,807	\$841,954	\$142,202,650	\$483,553,156	\$625,755,807
70.03 Commuter Rail	\$588,301,135	\$688,824	\$141,711,401	\$447,525,735	\$589,237,135
70.03 Allocated Contingency	\$10,550,740	\$0	\$0	\$9,614,740	\$9,614,740
70.06 Non-revenue vehicles	\$8,140,000	\$153,130	\$491,250	\$7,648,750	\$8,140,000
70.07 Spare parts	\$18,763,931	\$0	\$0	\$18,763,931	\$18,763,931
80 - PROFESSIONAL SERVICES (applies to Cats. 10-50)	\$329,356,410	\$4,259,054	\$266,849,084	\$66,826,374	\$333,675,457
80.01 Project Development	\$130,350	\$0	\$280,180	(\$149,830)	\$130,350
80.02 Engineering (not applicable to Small Starts)	\$186,457,254	\$2,232,981	\$190,312,183	\$191,392	\$190,503,575
80.02 Allocated Contingency	\$299,308	\$0	\$0	\$572,034	\$572,034
80.03 Project Management for Design and Construction	\$72,987,401	\$1,341,023	\$58,197,552	\$14,789,849	\$72,987,401
80.03 Allocated Contingency	\$9,270,000	\$0	\$0	\$9,270,000	\$9,270,000
80.04 Construction Administration & Management	\$22,557,063	\$637,709	\$10,482,612	\$19,772,922	\$30,255,534
80.04 Allocated Contingency	\$20,657,898	\$0	\$0	\$12,959,415	\$12,959,415
80.05 Professional Liability and other Non-Construction Insurance	\$4,305,769	\$0	\$3,558,530	\$747,239	\$4,305,769
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	\$6,341,599	\$47,338	\$3,997,069	\$2,344,530	\$6,341,599
80.06 Allocated Contingency	\$556,000	\$0	\$0	\$556,000	\$556,000
80.07 Surveys, Testing, Investigation, Inspection	\$3,367,824	\$0	\$20,957	\$3,346,866	\$3,367,824
80.08 Start up	\$1,797,957	\$0	\$0	\$1,797,957	\$1,797,957
80.08 Allocated Contingency	\$628,000	\$0	\$0	\$628,000	\$628,000
Subtotal (10 - 80)	\$1,812,347,451	\$20,636,642	\$632,012,764	\$1,193,276,936	\$1,825,289,700
90 - UNALLOCATED CONTINGENCY	\$111,324,845	\$0	\$0	\$98,382,596	\$98,382,596
Subtotal (10 - 90)	\$1,923,672,296	\$20,636,642	\$632,012,764	\$1,291,659,532	\$1,923,672,296
100 - FINANCE CHARGES	\$6,998,638	\$82,314	\$5,414,695	\$1,583,943	\$6,998,638
Total Project Cost (10 - 100)	\$1,930,670,934	\$20,718,956	\$637,427,459	\$1,293,243,475	\$1,930,670,934

Project Funding

The PCEP is relying on several sources of funding to complete the project. Table 6 below summarizes the JPB’s funding plan, as updated through June 23, 2017. The updated funding plan shows total funding of \$1,930,670,934 including \$647 million in Section 5309 funds. The plan also includes federal funding from the Section 5307 Urbanized Area Formula program of \$287,150,000.

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 \$164,522,000 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.

- **PMOC Observation:** The JPB has committed to reviewing the PCEP’s ability to meet cash flow requirements later in the project in light of lower than expected expenditures to date, which would lead to higher than projected monthly expenditures if BBII completes the work on schedule.

Table 6 – Project Funding Summary

Funding Source	Planned/Budgeted*	Committed*	Total (\$x1000)
Local	\$0	\$996,521	\$996,521
Federal	0	\$934,150	\$934,150
Total	\$574,043	\$1,356,628	\$1,930,671

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

Project Schedule

The FFGA was executed on May 23, 2017.

The JPB completed a re-baselining of its Master Project Schedule (MPS) in December 2017; the current schedule reflects the execution of the FFGA, the issuance of the final NTPs to the EMU and Electrification contractors, and the impacts to the overall project resulting from these delays.

The JPB committed to re-baselining its current MPS prior to April 17, 2019 to account for a number of significant impacts; however, the re-baselining has not been accomplished because the PCEP team has not received an acceptable TIA from the contractor. The JPB recently received the TIA for the CWT activities, which was rejected and must be resubmitted. The impacts include substantially slower than planned progress in OCS construction; the unexpected long period required to arrive at a satisfactory solution to the CWT issue; and the impact of adding a seventh car to the EMU trainsets, as well as other significant events such as the award of various contracts.

The JPB’s internal schedule update as of April 30, 2019 reflects the incorporation of some of the known impacts listed above, and its own assessment of other impacts such as differing site conditions (DSCs) and CWT. The April 30, 2019 update contains the following description of significant changes:

- a. *A variance exists from the prior month due to delays to the TPS-2 interconnect design which has caused delays to completion of Segment 4.*
- b. *Variances exist to the contractual substantial completion date due to the time it has taken to finalize the modifications required for the grade crossings, as well the effect that differing site conditions (DSCs) are having on OCS foundation installation. The JPB continues to work with BBII, and is urging BBII to accelerate the crossing design completion and issues relating to DSCs.*

Table 7 below, which is based on the MPS C18.03 with a Data Date of May 1, 2019, shows the current projected dates for completion of various significant project activities.

Table 7 – Schedule Status

Milestone	Baseline	Grantee Forecast	PMOC Forecast
New Starts/Core Capacity Grant Agreement:	Not in MPS	5/23/2017 (A)	5/23/2017 (A)
Design/Build Notice to Proceed:	12/08/15 (P)	6/19/2017 (A)	6/19/17 (A)
Arrival of First EMU at JPB	7/29/19	Fall 2019	10-28-19 (P)
Final Engineering (FE) Completion:	04/03/18 (P)	7-5-20 (P)	7-5-20 (P)
Systems Integration Testing Completed:	01/29/19 (P)	12/11/21 (P)	12/11/21 (P)
Segment 4 Complete to Begin EMU Testing:	11/21/19	5/22/20 (P)	7/19/20 (P)
Design/Build Completion:	02/16/19 (P)	9/2/21 (P)	9/2/21 (P)
Conditional Acceptance of First EMU Trainset:		March 2021	4/23/21
PG&E Provides Permanent Power:	9/9/21	9/9/21 (P)	9/9/21 (P)
Pre-Revenue Operation Completed:	05/07/20 (P)	12/9/21 (P)	12/9/21 (P)
Begin Phased Revenue Service:		9/27/21 (P)	4/22/22 (P)
Revenue Service Date (without Risk Contingency):	12/9/21 (P)	5/6/22 (P)	5/6/22
FFGA Final Completion Date:	05/07/20 (P)	8/22/2022 (P)	8/22/2022
(P) Planned Date (A) Actual Date			

Appendix E presents the PCEP's summary schedule C18.03 as contained in its April 2019 Monthly Report.

The following comments are based on a review of the various schedules available to the PMOC:

- *The Electrification contractor's most recent Schedule Update Narrative for May 2019 shows a Substantial Completion date of March 3, 2022, compared to the contractual date of August 10, 2020, which represents a further slippage of approximately ten (10) weeks from the dates reported in the PMOC's February 2019 report. The continued slippage has been due to the lack of resolution of the Consistent Warning Time (CWT) issue, which has caused a day-for-day delay based on the contractor's current schedule logic. The JPB has directed the Electrification contractor to proceed with the design of the grade crossing warning system using the dual speed check approach to achieve CWT. The Electrification contractor has submitted a TIA based on the recent resolution of CWT; however, the initial submittal has been rejected. The contractor has not submitted a TIA to account for the known delays to the OCS schedule due to Differing Site Conditions (DSCs). The JPB's review of the TIAs is expected to be a significant effort, but necessary to gain a clear understanding of the current status of the project's schedule.*
- *The JPB's purchase of additional EMUs, including a new Power Car for each trainset, has delayed the delivery of the first trainset. The JPB has decided that the first trainset will be delivered to the U.S. Department of Transportation's (DOT) Transportation Technology Center, Inc. (TTCI) in Pueblo, Colorado, for initial testing. This decision avoids delaying testing of the first trainset because of the delay in completing electrification and testing of Segment 4. Segment 4 will be used to test the other EMUs following their arrival.*

Conditional Acceptance of the first trainset is now shown as April 23, 2021; previously it was scheduled for December 2020.

- The PCEP's current schedule includes revised logic, referred to as Phased Revenue Service, related to the start of service using the new EMUs. This concept has not been described in detail. Previous versions of the schedule had included a period of pre-revenue testing following the completion of integrated testing of the electrified system, followed by a soft opening for revenue service on April 22, 2022 with a partial fleet of EMU vehicles, followed by a full Revenue Service Date (RSD) of August 22, 2022.

PMOC Observations:

- *The JPB has been unable to develop "what if" schedules to support analysis and mitigation of potential TIAs.*
- *The PMOC is concerned that the MPS does not include all activities to deliver the project; for example, Rail Activation is currently only shown as a role up activity. The Rail Activation Committee has been reconstituted and began meeting in May 2019. A draft schedule for rail activation activities has been produced and is being populated and refined. Significant effort should be put into developing the MPS as a working document to include all necessary activities to complete the construction, system integration testing, rail activation and safety and security signoffs. The PMOC's opinion is that the startup of electrified operations (EMU testing) on Segment 4 will provide an excellent opportunity to refine the Rail Activation Plan well in advance of starting electrified operations for revenue service.*
- *Construction activities have expanded to all four segments; however, the overall progress of work is far behind the original schedule. Foundation placement, which controls the pace of the OCS, continues to be delayed due to unanticipated underground obstructions.*
- *The JPB has been using the partnering process to focus attention on improving overall progress and has instituted weekly meeting with the contractor on foundation related issues; these appear to be improving production. The JPB also reports that track access delays have been reduced since April 2019.*
- *BBII has shifted its original potholing subcontractor to foundation work and all potholing work is now being done by a single subcontractor. The overall pace of the OCS work is controlled by the completion of foundations; however, efficient erection of the OCS poles can only occur when a continuous line of foundations is available for work crews. BBII, in an effort to improve productivity, temporarily halted and recently re-started foundation construction and pole erection after a sufficient number of cleared foundation locations were available to allow the work to proceed effectively. Although the OCS work is not on the project's critical path, continuing low productivity may result in it becoming critical. The contractor's ability to significantly increase the amount of OCS work put in place during any given period of time is also limited by the time allowed for on-track work.*

- The impact of these various factors is highlighted by comparing BBII's actual billing for November 2018 of \$7,109,650, compared to a budget for the period of \$14,357,311. On a cumulative basis, BBII has billed \$269,319,756 or approximately 50% of the expected amount thru November 2018, compared to a budget of \$537,743,090 for the same period. Using only BBII's projected average billings as reported in November 2018, to expend the original contract value by the originally planned date of August 2020 will require an average monthly expenditure of \$21,364,540.09. If a normal expenditure curve, similar to that originally projected by BBII is assumed, the maximum monthly billing could be significantly greater than the approximately \$24 million in the present plan. The above analysis is based on the original contract value and does not consider the additional costs incurred, or likely to be incurred because of change orders. The PMOC questions whether that level of expenditure is achievable given the current schedule constraints.
- *The JPB's recent decision to use the USDOT's test track in Pueblo, Colorado, to test and accept the first EMUs is a positive action which avoids the anticipated delay in completion of the JPB's own test track.* The PMOC notes that the Pueblo facility also contains facilities suitable for demonstrating the EMU's contractually required 110 mph capability. The PMOC's opinion is that demonstrating the EMU's high-speed capability on Caltrain's current Segment 4 tracks would require some upgrades to the track system and associated regulatory approvals.

E. Quality Assurance / Quality Control (QA/QC)

The following quality management activities were reported for the PCEP:

- Weekly meetings continue with BBII QA/Quality Control (QC) management representatives.
- The PCEP QMP is being updated to more fully address the quality requirements for the Stadler EMUs.
- An audit of LB Foster, manufacturer of insulated rail joints, is scheduled for mid-June.
- One BBII Non-Conformance Report (NCRs) related to concrete strength was closed upon receipt of 28-day break results. A second NCR for the light pole foundation in PS-7 is under review by the Engineer of Record.
- A Stadler Corrective Action Request (CAR) was rejected and returned for a re-write related to inadequate root-cause analysis.
- Tunnel Modifications Project: ProVen will be receiving a CAR for failure to properly implement its NCR program; several conditions that deserve a NCR are not properly documented.

PMOC Observations and Recommendations:

- The PMOC completed an on-site review of the PCEP quality program in November 2018. *The review revealed a number of deficiencies that are being addressed by the JPB. The PCEP's Quality Management Plan (QMP) is being*

revised to address the lack of a Project Specific Quality Plan for the EMU services consultant. This consultant provides on-site technical representatives monitoring EMU manufacturing in Switzerland and assembly in Salt Lake City, Utah. Other significant findings of the review include the following:

- The PCEP leadership has not conducted annual management reviews of the compliance and effectiveness of its quality program as required by its QMP; the most recent review of the QMP was conducted by the PCEP Quality team in November 2016.
- A formal audit of LTK’s EMU manufacturing and assembly oversight activities has not been conducted; *LTK has recently identified a quality manager who will be responsible for this activity.*
- No quality audits have been conducted of the JPB’s Engineering or Procurement functions as required by the QMP.
- The PMOC’s opinion is that additional quality resources, requested previously by the PCEP’s QA Manager, are needed to address the full range of quality activities on a project of the scale of the PCEP.
- The PMOC previously recommended that PCEP make use of appropriate staff from the San Carlos office to augment the PCEP quality program; *the PCEP QA Manager recently conducted quality training for personnel in that office.*

F. Safety and Security

The JPB contracts for safety and security consulting services to support the PCEP. The initial contract expired on December 31, 2018; the JPB authorized the award of a new five-year contract to the incumbent contractor at its December 2018 meeting.

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. Preparations are underway for the start of construction activities at the CEMOF by the CEMOF Modifications contractor.

The PCEP’s safety management team continues to hold regular monthly meetings of the Fire and Life Safety Committee and the Safety and Security Certification Review Committee. The Fire and Life Safety Committee continues to coordinate with local first responders to set up emergency drills. *The next meetings are set for June 26, 2019.*

The Electrification contractor is updating its Safety and Security Certification Plan (SSCP), which will be incorporated into the project’s SSMP. The contractor is also updating the Threat and Vulnerability Assessment (TVA).

The PCEP Safety Consultant is assisting with the development of the Rail Activation Plan.

- **PMOC Observation:** The PMOC remains concerned that a formal clearance signoff process is not in place prior to returning track to service on the various contracts within the PCEP, e.g., following the erection of catenary appurtenances.

G. Americans with Disabilities Act (ADA)

The new EMU vehicles will be equipped with powered on-board lifts to provide assistance to 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.

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

H. Buy America

- The EMU vehicle consultant visited Stadler's Salt Lake City facility during late January 2018 to verify Stadler's Buy America compliance and its progress in arranging for American equipment suppliers. *The EMU vehicle consultant plans to perform an intermediate Buy America audit in the fall of 2019.*
- The PCEP's QA Manager reports that he routinely reviews Buy America documentation as a part of his audit of vendor files.

I. Vehicles

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 train sets. 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 trains. 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 will be delivered 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. Later, 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.*

The JPB is moving forward with a change in performance requirements for train sets 2-19. This change will reduce the 110-mph testing requirement to 90-mph for all but the first EMU trainset. This requirement is associated with the future operation of the EMUs in blended service with the CHSRA trains.

Stadler reported the following progress on the vehicles:

- *19 of 133 car shells have been manufactured and shipped to the U.S.; 13 have been received in Salt Lake City and are being assembled.*
- *A meeting was held on May 21, 2019 with representatives of the PCEP, Stadler, and PG&E to discuss the critical importance of regeneration by the EMUs into PG&E's grid.*
- *Stadler is preparing a Change Order for testing of the first trainset at the TTCI in Pueblo, Colorado.*

Regulatory Issues

The JPB sent the FRA a request for interpretation, dated September 19, 2017, related to use of the high-level doors in lieu of emergency egress windows in passenger intermediate seating levels. The JPB followed that request with a letter dated December 21, 2017 formally requesting a waiver of the requirements of 49 CFR 238.113(a)(3) and 238.114(a)(3) for the EMU cars A, B, C and E. 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. This alternative has several difficult and potentially expensive impacts and the JPB has not reached a decision on how to proceed. *The JPB's decision on this matter has been pending for several months, and a proposal is scheduled to be heard by the CMB in June 2019.*

The JPB previously reported that it has finalized the on-board bicycle parking arrangement and will continue to stack bikes as is currently done. However, a concern was raised by one of Caltrain's passengers regarding bikes blocking emergency egress. The JPB has reviewed the issue with the car manufacturer and the FRA and states that the EMUs are in compliance with applicable FRA regulations.

The FRA has raised questions related to a retractable lower step and whether it is a "safety appliance" subject to its regulations. The JPB's opinion is that the step is not a safety appliance.

4) Project Risk and Contingency

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 subset of the Risk Register and the project's Risk Management Committee 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 held an EMU Risk Refresh on December 18, 2018 and an Electrification Risk Refresh on January 15, 2019. The JPB's risk team re-ran the Monte Carlo simulation models for both cost and schedule risk; however, the results have not been finalized. Initial indications are that the direct cost of risk (without considering schedule related costs) was reduced from approximately \$150 million to \$106 million, and the p70 project completion date extended slightly beyond the current Final Completion Date (FCD) of August 22, 2022. The Risk lead is assembling additional data on overhead costs for the various contracts to more accurately assess the schedule related costs. 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 following are the top risks, with risk number, shown on the current PCEP risk register. *Risks shown in italics are new to the list since the previous report.*

(279) BBII may be unable to develop grade crossing modifications that meet regulatory requirements prior to scheduled testing and commissioning of the system.

(313) Contractor sequencing of early utility location, preliminary design, and foundation construction may result in inefficiencies in construction, redesign, and reduced production rates.

(303) 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.

(242) Track access does not comply with contract-stipulated work windows.

(223) Major program elements may not be successfully integrated with existing operations and infrastructure in advance of revenue service.

(257) Potential that modifications to the PTC database and signal software are not completed in time for cutover and testing.

(14) JPB will delay timely decision to reconfigure seats and upper level doors to comply with FRA waiver denial, resulting in increased cost and delay to RSD.

(267) Additional property acquisition is necessitated by change in design.

(308) Rejection of Design Variance Request for autotransformer feeder (ATF) and static wires results in cost and schedule impacts to PCEP.

(268) Decisions on stakeholder requested changes to the vehicles (e.g., High Level Doors in lieu of windows as emergency exits) delay the revenue service date.

(298) Changes to PTC implementation schedule could delay completion of the electrification work. Cost and schedule of BBII contract could increase as a result of change in PTC system.

Appendix F is a listing of the top project risks from the most recent PCEP Risk Register.

- ***PMOC Observations:*** 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 meeting and the rationale for the changes is not always fully articulated in the monthly risk register updates reviewed by the PMOC.
- *The PMOC has observed an improvement in coordination between the PCEP and Caltrain operations, which has resulted in reduced conflicts related to track access for the project's contractors.*

5) Discussion of Monitoring Plan Items

The PMOC recently received an update of the PMP and several subplans; the PMOC will initiate reviews of these documents in the near future. The main issues affecting the project at this time are schedule related, including the potential cost of the schedule related problems.

The issues are well understood by the PCEP. The PMOC has focused its attention during recent visits on the need to expand the resources being applied to the most significant technical issues and identifying someone to lead the management of these issues. The PCEP team has responded positively to the PMOC's suggestions and these efforts appear to be improving effectiveness. The PMOC will continue to focus on more general project management issues, including the changeover to a new CM contractor, while awaiting clarification of the current electrification schedule.

6) Action Items

Table 8 shows the status of Action items as of June 12, 2019.

Table 8 – Action Items

No.	Action Item	Discussion	Agreed Due Date	Responsibility Agency/Name	Status
5.05	JPB to prepare a white paper describing how the federal interest in the PG&E-JPB interconnection will be preserved if the real estate becomes the property of PG&E.	This issue is unresolved and was not addressed through execution of Supplement #4.	<i>NLT QPRM #10</i>	JPB: Legal Counsel FTA: Fox	Issue is Ripe as of QPRM #6 <i>Unchanged 6-12-2019</i>
7.01	JPB to provide an assessment of how much of the previously purchased and/or installed CBOSS-PTC equipment is still considered useful with the Wabtec system.	An inventory comparing on-board and wayside components for CBOSS-PTC and Wabtec I-ETMS should be provided.	<i>NLT QPRM #10</i>	Bouchard	On-board equipment discussed 9-11-18; wayside equipment and inventory still needed. <i>Carry forward to Action Item 9.10</i>
7.06	JPB, FTA and the PMOC to have a Schedule Containment Workshop.	Timing should consider when TIA 2 complete. <i>JPB is working on a schedule update.</i>	NLT QPRM#8	PMOC - Eidlin JPB- A. Christofas	Preliminary Discussions held 8-16-2018. <i>On-hold until updated schedule is available.</i>

No.	Action Item	Discussion	Agreed Due Date	Responsibility Agency/Name	Status
8.01	JPB to indicate percent of Full-time Equivalent by position on Org Chart.		NLT QPRM #9	Larano	Complete 12-18-2018
8.02	JPB to produce a Roadmap to Rail Activation/System Integration Testing with dates.		NLT QPRM #9	Funghi/Bouchard	Roadmap complete 12-18-2018. <i>Projected completion dates to be added on future versions.</i>
8.03	JPB to show anticipated completion dates on the slides for items such as potholing, UPRR approval of grade crossing design, and other critical path items.		NLT QPRM #9	Larano	Complete 12-18-2018
8.04	JPB to produce a slide showing aging on Change Orders, Change Notices, RFIs, etc.		NLT QPRM #9	Cocke	Complete 12-18-2018
8.05	JPB to consider re-aligning its Quality reporting to be independent of project management and revise its Org Chart accordingly.	QA reports to LTK on the EMU procurement.	NLT QPRM #9	Funghi/Bouchard	Completed 12-18-2018
8.06	JPB to provide a revised scope, description, schedule and work plan for completing proposed CEMOF modifications.	Incorporate details in updated PMP and sub-plans	NLT PMOC Nov 2018 Visit	Guan	Description provided 12-18-2018

No.	Action Item	Discussion	Agreed Due Date	Responsibility Agency/Name	Status
8.07	JPB to produce a slide showing the number of conflicts between proposed foundation locations and installed CBOSS-PTC fiber optic cable by Segment		NLT QPRM #9	Guan	Completed 12-18-2018
8.08	The PMOC requested that the JPB complete an inventory of the on-board and wayside equipment purchased and installed by CBOSS-PTC, and which items will be reusable for the Wabtec system.		NLT April 17, 2019	Bouchard	See Action Item 9.01
<i>9.01</i>	<i>Italicize future Change Order tables to show changes from prior quarter.</i>		<i>NLT QPRM #10</i>	<i>Cocke</i>	
<i>9.02</i>	<i>Reset the due date for Action Item 8.08 to April 17, 2019.</i>		<i>NLT QPRM #10</i>	<i>Bouchard</i>	<i>On-board equipment discussed 9-11-18; An update on wayside equipment was presented in April 2019. An inventory is still needed.</i>
<i>9.03</i>	<i>Italicize changes on future Non-PCEP Grant Status table.</i>		<i>NLT QPRM #10</i>	<i>Chan</i>	

Legend: Colored italics indicate a new entry from the previous version. Shaded cells indicate a completed item.
 Colored italics indicate a new entry from the previous version. Shaded cells indicate a completed item. Items are removed from the Action Item list for the second report following the report in which they are reported complete.

Appendix A: List of Acronyms

Acronyms	List of Terms
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ARINC	<i>Aeronautical Radio, Incorporated</i>
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	<i>Corrective Action Request</i>
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	<i>Control Point</i>
CPUC	California Public Utilities Commission
CSCG	City/County Staff Coordinating Group
CWT	Constant Warning Time
D-B	Design-Build
DBB	Design-Bid-Build
DBE	Disadvantaged Business Enterprise
DEIR	Draft Environmental Impact Report
DQP	Design Quality Plan
DRB	Disputes Review Board
DSC	Differing Site Condition
DSDC	Design Support During Construction
DVR	Design Variance Request

Acronyms	List of Terms
EA	Environmental Assessment
EAC	Estimate at Completion
EE	Entry into Engineering
EIR	Environmental Impact Report
EMU	Electric Multiple Unit Rail Vehicle
ETB	Electrified Trolley Buses
FCD	Final Completion Date
FD	Final Design
FEIR	Final Environmental Impact Report
FERC	Federal Energy Regulatory Commission
FFGA	Full Funding Grant Agreement
FMOC	Financial Management Oversight Consultant
FMP	Fleet Management Plan
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FY	Fiscal Year
GO	General Order (issued by the CPUC)
HSR	High-Speed Rail
I-ETMS	Interoperable Electronic Train Management System
IFC	Issued for Construction
IFB	Invitation for Bids
IGA	Inter-Governmental Agreement
Cal ISO	California Independent System Operator
ITCS	Incremental Train Control System
JPB or PCJPB	Peninsula Corridor Joint Powers Board
<i>Jacobs</i>	<i>Jacobs Project Management Company</i>
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
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
PCEP	Peninsula Corridor Electrification Program
PCWG	Peninsula Corridor Working Group

Acronyms	List of Terms
PD	Project Development Phase
PG&E	Pacific Gas and Electric
PHA	Preliminary Hazard Assessment
PMOC	Project Management Oversight Contractor
PMP	Project Management Plan
ProVen	ProVen Management, Inc.
PS	Paralleling Station for Traction Power Supply
PTC	Positive Train Control
PTG	Parsons Transportation Group
QA	Quality Assurance
QAP	Quality Assurance Plan
QC	Quality Control
QMP	Quality Management Plan
QPRM	Quarterly Progress Review Meeting
<i>RAC</i>	<i>Rail Activation Committee</i>
<i>RAP</i>	<i>Rail Activation Plan</i>
RAMP	Real Estate Acquisition Management Plan
<i>RFI</i>	<i>Request for Information</i>
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
RWIC	Roadway Worker in Charge
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
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
SMCTA	San Mateo County Transportation Authority
SME	Subject Matter Expert
SOGR	State of Good Repair
SONO	Statement of No Objection
SP	Southern Pacific Transportation Company
SSCP	Safety and Security Certification Plan
SSI	Sensitive Security Information
SSMP	Safety and Security Management Plan

Acronyms	List of Terms
SSOA	State Safety Oversight Agency
SVP	Silicon Valley Power
<i>TAD</i>	<i>Track Access Delay</i>
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
TPS	Traction Power System
TPSS	Traction Power Substation
TrAMS	Transportation Award Management System
TTCI	Transportation Technology Center, Inc.
TVA	Threat and Vulnerability Analysis
TVM	Transit Vehicle Manufacturer
UPRR	Union Pacific Railroad
<i>USDOT</i>	<i>U. S. Department of Transportation</i>
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

Appendix B: Safety and Security Checklist

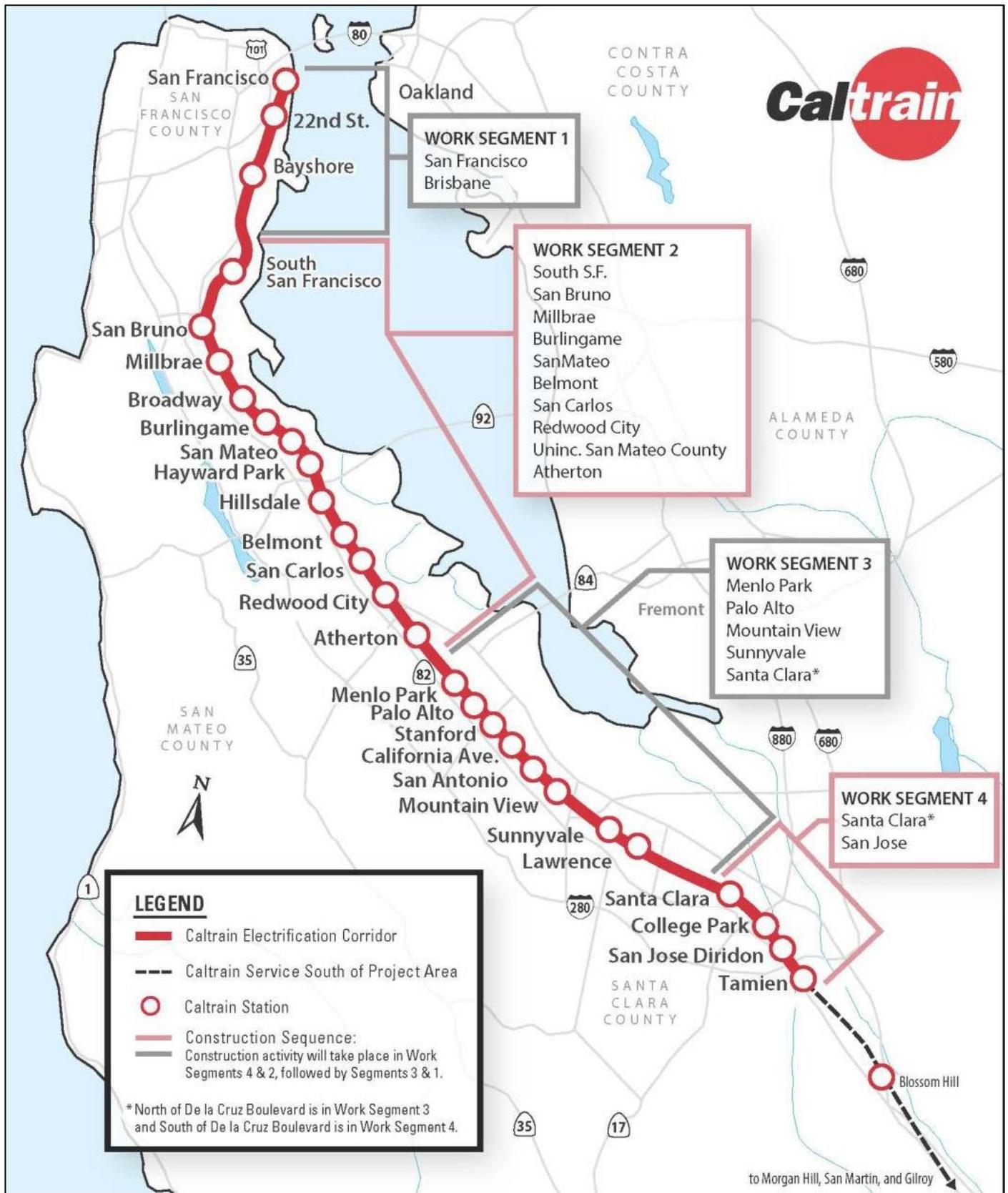
Project Overview			
Project Mode	Commuter Rail		
Project Phase	FFGA – Construction		
Project Delivery Method	Design-Build, Design-Bid-Build		
Project Plans	Version	Review by FTA	Status
Safety and Security Management Plan (SSMP)	Rev 4	Y	Under Review
Safety and Security Certification Plan (SSCP)	Rev 0		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

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 Program Review Meeting?	N	QPRM No. 9 was held December 18, 2018
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		
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this project?	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.

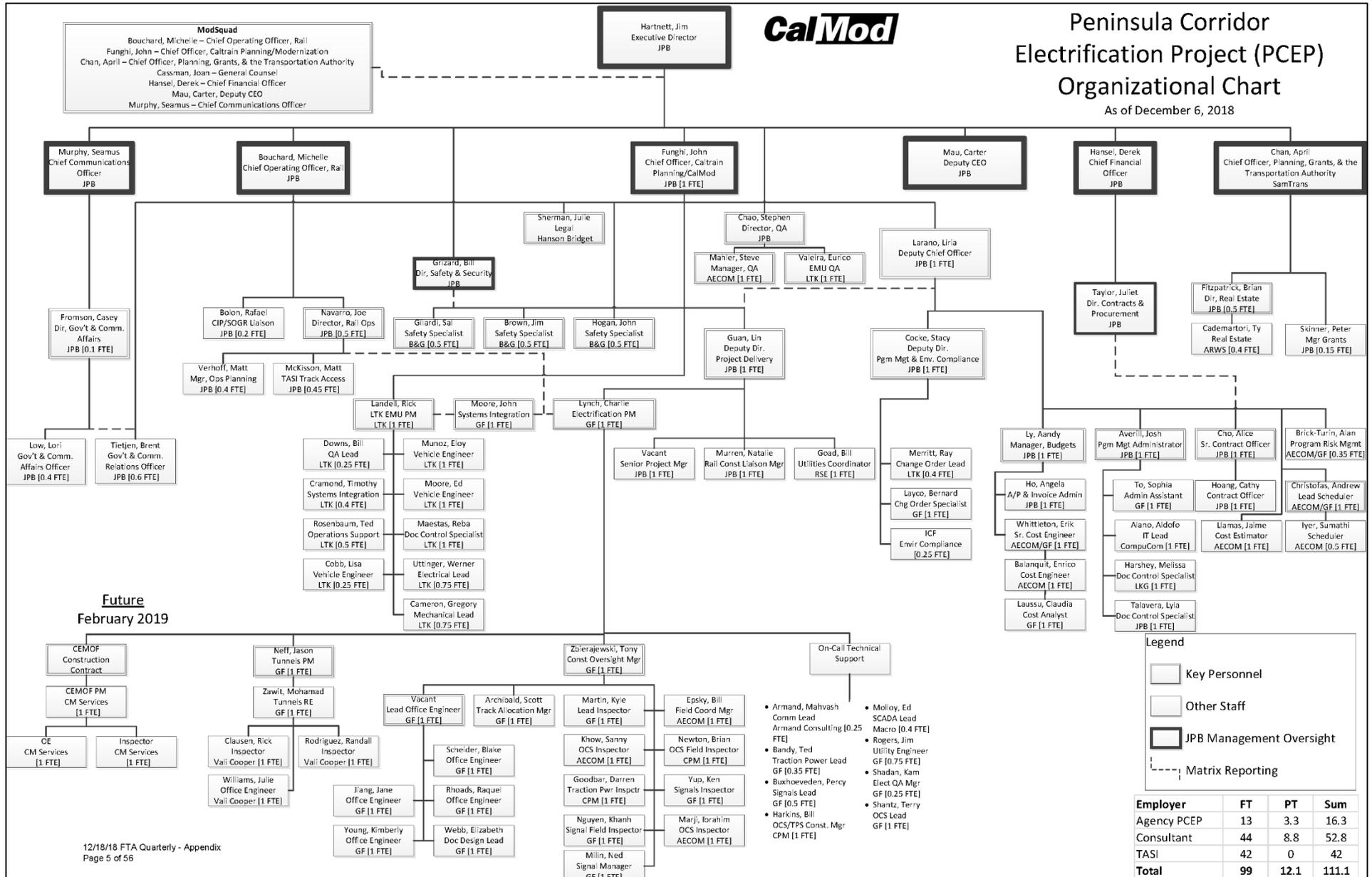
Area of Focus	Y/N	Notes/Status
Has the Project Sponsor established staffing requirements, procedures and authority for safety and security activities throughout all project phases?	Y	Section 3.0 of SSMP
Does the Project Sponsor update the safety and security responsibility matrix/organizational chart 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 is being prepared for changes to the CEMOF facility to accommodate the new EMUs. 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.
Has the Project Sponsor verified conformance with safety and security requirements in equipment and materials procurement?	Y	Through the Safety & Security Certification Process.
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 work-arounds?	Y	This is included in the Rail Activation Committee scope during testing/startup activities. BBII's Safety & Security Certification flow chart identifies the process.

Area of Focus	Y/N	Notes/Status
Has the Project Sponsor demonstrated through meetings or other methods the integration of safety and security in the following: <ul style="list-style-type: none"> • Activation Plan and Procedures • Integrated Test Plan and Procedures • Operations and Maintenance Plan • Emergency Operations Plan 	Y Y N N	A Rail Activation Plan is currently being developed for initial testing and operation of the new EMUs. <i>The PCEP has hired an individual to lead the development of this plan and the reconstituted Rail Activation Committee had its first meeting in May 2019.</i> Integrated Test Plan & 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 Design Build contractor’s reported OSHA statistics for the project showed a Total Recordable Incident Rate of 1.42 for the year 2018 compared to the most recent (2017) BLS rate of 2.5 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?		NA
Federal Railroad Administration		
If 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 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.
Other FRA required Hazard Analysis – Fencing, etc.?	TBD	This is an operating ROW and no service change is expected.
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. 9 on December 18, 2018.

Figure 1
Peninsula Corridor Electrification Project Map



Appendix D: PCEP Organization Chart



Appendix E: Summary Project Schedule

MASTER PROGRAM SCHEDULE C18.03					_PCEP C18.03 Summary												FOR INTERNAL USE ONLY 05-21-19 09:53											
#	Activity Name	Duration	Start	Finish	2014		2015		2016		2017		2018		2019		2020		2021		2022							
					Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4					
1	MASTER PROGRAM SCHEDULE C18.03	2168d	05-01-14 A	08-22-22																								
2	MILESTONES	2168d	05-01-14 A	08-22-22																								
3	Start	0d	05-01-14 A																									
4	NEPA Reevaluation Complete	0d		02-11-16 A																								
5	LNTTP to Electrification Contractor	0d	09-06-16 A																									
6	LNTTP to Vehicle Manufacturer	0d	09-06-16 A																									
7	FTA Issues FFGA	0d		05-23-17 A																								
8	Segment 4 (incl. Test Track) Complete	0d		05-22-20																								
9	Electrification Substantial Completion	0d		09-24-21																								
10	Start Phased Revenue Service	0d	09-24-21																									
11	Revenue Service Date (RSD) w/out Risk Contingency	0d		05-06-22																								
12	Revenue Service Date (RSD) w/ Risk Contingency (FFGA RSD)	0d		08-22-22																								
13	PLANNING / APPROVALS	1230d	05-01-14 A	01-16-19 A																								
14	REAL ESTATE ACQUISITION	914d	11-05-15 A	06-12-19																								
15	OVERHEAD UTILITY RELOCATION (Various)	852d	03-10-17 A	07-17-20																								
16	PG&E INFRASTRUCTURE	1151d	03-01-17 A	09-09-21																								
17	INTERCONNECT (Feasibility Study)	171d	03-01-17 A	10-31-17 A																								
18	INTERIM POWER	322d	08-01-17 A	11-05-18 A																								
19	PERMANENT POWER	1044d	08-01-17 A	09-09-21																								
20	DESIGN & PERMITTING	431d	08-01-17 A	04-12-19 A																								
21	CONSTRUCTION	612d	04-15-19 A	09-09-21																								
22	ELECTRIFICATION (BBII)	1351d	09-06-16 A	11-09-21																								
23	DESIGN	999d	09-06-16 A	07-05-20																								
24	CONSTRUCTION	1463d	10-09-17 A	10-10-21																								
25	Segment 1	707d	05-21-19	04-26-21																								
26	OCS	318d	04-20-20	03-03-21																								
27	Traction Power	406d	05-21-19	06-29-20																								
28	Segment Testing	54d	03-04-21	04-26-21																								
29	Segment 2	1463d	10-09-17 A	10-10-21																								
30	OCS	1015d	10-09-17 A	07-19-20																								
31	Traction Power	1361d	01-19-18 A	10-10-21																								
32	Segment Testing	54d	11-20-20	01-13-21																								
33	Segment 3	592d	04-09-19 A	11-20-20																								
34	OCS	434d	07-22-19	09-27-20																								
35	Traction Power	399d	04-09-19 A	05-11-20																								
36	Segment Testing	54d	09-28-20	11-20-20																								
37	Segment 4	904d	12-01-17 A	05-22-20																								
38	OCS	297d	02-25-19 A	12-18-19																								
39	Traction Power	888d	12-01-17 A	05-06-20																								
40	Segment Testing	92d	02-21-20	05-22-20																								
41	TESTING	197d	04-26-21	11-09-21																								
42	DRILL TRACK (TASI)	20d	05-01-19	05-29-19																								
43	SCADA (Arinc)	1500d	03-30-15 A	02-23-21																								

Last Months Update
 Near Critical
 Critical
 Risk Contingency
 Start Milestone
 Finish Milestone
 Critical Milestone

Page 1 of 2

Filename: _C18.03 051719

Date	Revision	Checked	Approved
05/21/2019	Updates & Revisions Completed By A. Christofas		
	Checked By S. Iyer		

Appendix F: Top Project Risks

Program Risk Register				Version Date: May 24, 2019 - Top Risks					Caltrain							
				LOW	MEDIUM	HIGH	VERY HIGH	SIGNIFICANT								
Probability				< 10%	10% - 50%	50% - 75%	75% - 90%	> 90%								
Cost				< \$500 K	\$500 K - \$2 M	\$2 M - \$10 M	\$10 M - \$20 M	\$20 M - \$50 M								
Schedule				< 1 Month	1 - 3 Months	3 - 6 Months	6 - 12 Months	> 12 Months								
ID	RBS		RISK DESCRIPTION	EFFECT(S)	T	P	I	C	B	G	OWNER	MITIGATION ACTIONS	RETIREMENT DATE(S)	NOTES	A-C	STATUS & REMARK(S)
	FUNC. (P)	FUNC. (S)														
279	R	Elect.	Construction	BB11 may be unable to develop grade crossing modifications that meets stakeholder and regulatory requirements within the program schedule.	Delay to revenue service and associated costs for delay.	T	S	S	4	48	DB/Signals	<ol style="list-style-type: none"> Develop solution under Allowance Item 1.d.1 Item # 10. Advance speed check solution. Coordinate solution with Operations - Complete. Approve concepts on case-by-case basis. Meet with PRA staff in Washington and Sacramento, CPUC, and UP. Consider giving BB1 approval for concept developed and sharing risk resulting from implementation. Revise budget to achieve desired solution if needed. 	Substantial Completion/Revenue Service	Description and grading changed per Risk Assessment Committee - 1/15/2019	<p>Relying on speed check solution. Operations needs to agree. Showed concept to PRA and they verbally don't have an issue. Met with staff in DC. Have not met with Nagano PRA or CPUC. Responding to PRA with BB1 information.</p> <p>Regional meeting in Sacramento.</p> <p>Allowance #48 million problem is \$50 million.</p> <p>- C. Lynch 6/4/2019</p> <p>Need to negotiate with BB1. CWB addressing \$900,000 change order for November 17 to July 19.</p> <p>- S. Cooke 2/1/2019</p>	
313	R	Elect.	Construction	Contractor sequencing of early utility location, preliminary design, and foundation construction may result in inefficiencies in construction, redesign, and reduced production rates.	Delay and additional cost for rework.	T	S	4	4	40	DB	<ol style="list-style-type: none"> Positively identify know utilities in advance of foundation construction. Reprobe foundation locations when all design elements have been taken into consideration including line of sight, adjustment of poles, etc. 	Completion of construction of foundations	Added per Risk Audit - 4/17/2019	Revised per Risk Assessment Committee - 5/6/2019	Revised per Risk Assessment Committee - 5/6/2019
303	R	Elect.	Physical Site	Extent of differing site conditions and delays in resolving differing site conditions delays completion of electrification increases program costs. Contractor is encountering more DGCs than anticipated and taking longer to resolve.	More differing site conditions and longer to resolve. Extends construction of foundations and the OCS system and results in less efficient construction of foundations.	T	S	3	4	35	Quan	<ol style="list-style-type: none"> Define process for resolving DGCs to clear locations for foundation installation. Add additional controlling draws to increase production and deal specifically with DGCs. 	Completion of last foundation	Revised per Risk Assessment Committee - 1/15/2019	<p>Working with B&Bfour on case-by-case basis. Have added resources to address DGC resolution, including field resources and leader on a per segment basis.</p> <p>Revised concern with contractor on contractor inefficiencies. This includes productivity concerns with the portable draws and inefficiencies with the foundation crew.</p> <p>Will do "incent evaluation" of DGCs.</p> <p>- L. Guan 5/20/2019</p> <p>Revised by Risk Audit - 4/17/2019</p>	
242		Elect.	Construction	Track access does not comply with contract-stipulated work windows.	Contractor claims for delays, schedule delays and associated costs to owners representative staff.			4	4	3	28	Quan	<ul style="list-style-type: none"> Develop a comprehensive and multi-phased program to increase track access for contractor that avoids impacts to daily train operations. Actions to be considered include: <ul style="list-style-type: none"> Additional reworked work Weekend shutdowns Adding additional crews for accelerated work windows Bus bridges Additional contractor resources (e.g., additional pot-holing equipment) Changes to scheduled meets Negotiate impact of construction operations on T&E bonus payments. 	Completion of Construction		<p>Working with Operations to provide contract-stipulated work windows (one work area, one rework-stipulated). Will continue to provide staff in advance, negotiate bus on modified work areas to minimize impacts to Operations. This plan will be in effect starting the week of 5/20.</p> <p>Operations has shifted some team needs. Implemented standard procedures to accommodate work windows. Additional rule change/clarification are being reviewed to further help facilitate production.</p> <p>Recommendations for T&E based on clarifications to the resolutions rule are in process.</p> <p>- Lin S. 5/20/2019</p>
223		Elect.	Contracting	Major program elements may not be successfully integrated with existing operations and infrastructure in advance of revenue service.	Process changes resulting from electrification may not be fully and properly integrated into existing system. Rework resulting in cost increases and schedule delays.	T	S	2	3	25	Moore	<p>Routinely meet with PTC, capital projects. Beforehand, identify interfaces and resolve issues through specialized working groups.</p> <p>Identify work (especially signal related) that will require Configuration Database changes as early as possible to avoid delays.</p>	Revenue Service Date	Risk #264 was retired and incorporated into this risk per Risk Assessment Committee - 5/9/2018	<p>Meeting was held with the D-B Team this week to discuss out-of-coverage strategy. Several new personnel additions to the D-B team bring good experience to the discussion. A staging plan for Equipment 4 has been promised to be submitted NLT June 7, 2019.</p> <p>-J. Moore 5/24/19</p>	
257		Elect.	Construction	Potential that modifications to the PTC database and signal software are not completed in time for out-of-coverage testing.	Failure to follow the Configuration Management process will result in delays to completing PCEP signal software. This could delay in-service completion as well as impact substantial completion.			4	2	4	24	Moore	<ol style="list-style-type: none"> Follow Caltrain's Database Management process for any changes associated with Electrification that may affect the PTC database. Early identification to assure sufficient time. Continuing meetings between PCEP, PTC, and configuration manager to facilitate coordination. 	Completion of Construction	Reassigned to J. Moore per Risk Assessment Committee - 5/23/2018	<p>PTC and Configuration management were in attendance at Out-of-Coverage Planning Meeting held 5/22/19 with the D-B Team. This matter is remaining as a priority item team relating to signal out-of-coverage accomplishment.</p> <p>-J. Moore 5/24/19</p>

Program Risk Register

Version Date: May 24, 2019 - Top Risks

	1	2	3	4	5
	LOW	MEDIUM	HIGH	VERY HIGH	SIGNIFICANT
Probability	< 10%	10% - 50%	50% - 75%	75% - 90%	> 90%
Cost	< \$500 K	\$500 K - \$2 M	\$2 M - \$10 M	\$10 M - \$20 M	\$20 M - \$50 M
Schedule	< 1 Month	1 - 3 Months	3 - 6 Months	6 - 12 Months	> 12 Months



ID	RBS		RISK DESCRIPTION	EFFECT(S)	TYPE	IMPACT					OWNER	MITIGATION ACTIONS	RETIREMENT DATE(S)	NOTES	A-C	STATUS & REMARK(S)	
	FUNC. (P)	FUNC. (S)				PROBABILITY	COST	SCHEDULE	GRAVITY								
14	R	EMU	Contracting	JPB will deliver timely decision to reconfigure seats and upper level doors to comply with RRA w/veiw panel, resulting in increased cost and delay to RSD.	Schedule delay, Cost increase.	T	4	3	2	20	Lendall	Contractor is always bringing in suggestions for changes; changes must be mutually agreed - Part of negotiations. Implement a review process to evaluate variation proposals. A complete technical review was made in meetings leading up to the negotiations and further during negotiations w/ Stadler during the week of 5/2/18.	Conditional Acceptance of U4H Transit		A	Status unchanged. Plugging high level doors and rearrangement of bike storage continues to be considered by Caltrain - R. Lendall 05/22/2019	
267	R	Elect.	Construction	Additional property acquisition is necessitated by change in design.	New project costs and delays to schedule.	T	4	1	4	20	Ritzpatrick	1. Project delivery team to work with contractor to ID new parcels w/val before they are needed for construction 2. Expedite development of state and agency 3. Enter into work directives for appraisal and acquisition before parcels are identified	Completion of Construction	Most acquisition is for easements, some foundations not on JPB property; maximum time impact of 3 months. Inefficient but not major impact. - 12/21/2018	B	Design change necessitated by UP and PQBE requests in Segment 4. May not be able to procure property in time for construction. - B. Ritzpatrick 4/17/2019	
308	R	Elect.	Contracting	Rejection of OIR for AVT and static wires results in cost and schedule impacts to PCBP.	Delay and delay claims	T	5	2	2	20	Fungli		Installation of wire in all segments.		J	BBII is currently re-designing poles to include the contract specified Static and Fader wires. The initial re-design efforts indicate minimal impact to the original or initial pole designs in Segment 4. Early indications indicate that poles serving curves may need to be updated. We estimate that up to 3 percent of the original or initial pole designs will need to be updated. - J. Fungli 4/16/2019	
268	R	EMU	Construction	Decisions on stakeholder requested changes to the variables (e.g., High Level Doors in lieu of windows as emergency exits) delays revenue service date.	Delays to completion of construction and additional cost to changes in design.	T	3	2	4	18	Lendall	1. Monthly Conference Calls with the RRA 2. Face to Face Meetings with RRA in November 2017 and February 2018 3. Submit requests for waivers and Interim Agreements 4. Submitte of Base and AVT w/veiw applications 5. Caltrain representatives met with RRA in Washington, DC on August 28, 2018 to discuss high level door question. No change in RRA's position. 6. Feedback section 11 to remove flip-up seats in front of high-level doors 7. Issue being elevated to a high level.	RRA Sample Car Inspection and Conditional Acceptance of First Trainset		R	Mitigated 6 weeks - 3/21/19 R. Lendall Mitigated 7 weeks 4/23/19. A decision must be made, and delays will add cost and schedule impact. - R. Lendall 4/23/19	
298	R	Elect.	Construction	Changes to PTC implementation schedule could delay completion of the electrification work. Cost and schedule of BBII contract could increase as a result of change in PTC system.	1. Changes in details could affect what Balfour provides; could affect timing for testing; could change books that RRA had to review. 2. Full integrated testing between EMU and wire/cable cannot be conducted without PTC in place. 3. Delays to completion of signal system could result in conflicts with PTC testing and PCBP construction and integrated testing. 4. Potential for track access impacts due to PTC testing.	T	3	3	3	18	Lynch	1. Changes in details could affect what Balfour provides; could affect timing for testing; could change books that RRA had to review. 2. Full integrated testing between EMU and wire/cable cannot be conducted without PTC in place. 3. Delays to completion of signal system could result in conflicts with PTC testing and PCBP construction and integrated testing. 4. Potential for track access impacts due to PTC testing.	Completion of integrated testing	Risk divided into JPB risk and O/R risk per Risk Assessment Committee - 3/27/2018		C	This has potential to affect BBII signal cutover work but too early to tell until we get a cutover schedule. The PTC Configuration Phase dates are: 1/6/19 thru 9/27/19 - (the initial RSD period for Caltrain trains) 2/10/19 thru 12/20/19 - (the period of interoperability demonstration with UPRR) 3/1/2020 thru 3/31/2020 - (the period of interoperability demonstration with Amtrak and ACE) JPB has NOT yet communicated these particular dates to BBII. The current schedule is not accurate and therefore conflicts cannot be determined. - C. Lynch 4/9/2019

Appendix G: 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 26 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 14 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.