

## Quarterly Monitoring Report – December 2019

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

January 15, 2020

PMOC Contract Number: DTFT60-14-D-00018  
Task Order Number: 005  
Project Number: DC-27-5346  
Work Order Numbers: 07 and 09  
OPs Referenced: 25 - Recurring Oversight and Related Reports  
01 - Administrative Conditions and Requirements

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

PMOC Lead: Michael B. Eidlin  
Length of Time Firm Assigned to Project: 4 Years, 6 months  
Length of Time Person Assigned to Project: 4 Years, 6 months

## **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) is being modified to service the electrified vehicles.

The PCEP is part of a larger JPB initiative known as the Caltrain Modernization Program (CalMod). The CalMod program is separately installing a Positive Train Control (PTC) system, which is an advanced signal system that includes federally mandated safety improvements.

The project is being constructed primarily in the existing Caltrain corridor on rights-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 awarded its final major construction contract to ProVen Management, Inc. for modification of its CEMOF, and issued a full Notice to Proceed (NTP) on September 16, 2019. Proven's work is expected to take approximately seven (7) months, after which Balfour-Beatty Infrastructure, Inc. (BBII) will install the Overhead Contact System (OCS) in the CEMOF yard.

- PG&E is constructing the improvements at its FMC and East Grand substations to provide permanent power to TPSS #2 and TPSS #1, respectively. The FMC substation has already been modified to provide interim power to TPSS #2 for testing purposes. *Construction of the interconnection between FMC and TPSS #2 has been further delayed by the Electrification contractor's sub-contractor TRC's unwillingness to construct the work, citing unacceptable business risk. Completion of the intertie is likely to extend to late spring 2020 or later depending on the resolution of the current contract issue.*
- The JPB has procured an additional 37 EMUs from Stadler using a contract option; 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 December 16-18, 2019.*

### C. Core Accountability Information through October 2019

<b>FFGA Core Accountability Items</b>			
Project Status: <b>In Construction</b>		Original at FFGA	Current Estimate (EAC) <sup>1</sup>
Cost	Cost Estimate	\$ 1,930,670,934	\$ 1,930,670,934
Contingency	Unallocated Contingency	\$152,913,317	\$83,653,100
	Total Contingency (Allocated plus Unallocated)	\$315,533,611	\$169,515,911
Schedule	Final Completion Date	August 22, 2022	August 22, 2022
		Amount (\$)	Percent
Planned Value to Date <sup>2</sup>	Total budgeted cost of work scheduled to date <sup>3</sup>	\$937,094,491	48.54%
Earned Value to Date	Budgeted cost of work completed to date, i.e., actual total value of work earned or done <sup>3</sup>	\$578,904,045	29.98%
Actual Cost <sup>4</sup>	Total cost of work completed to date (actual total expenditures) <sup>3</sup>	\$760,967,124	39.41%
		Amount (\$)	Percent
Contracts	Total contracts awarded to date <sup>4</sup>	\$1,635,749,850	86.97%
	Total construction contracts awarded to date <sup>5</sup> (construction & vehicle contracts only)	\$1,422,267,980	75.62%
	Physical construction work completed <sup>6,7</sup> (amount of construction contract work actually completed)	\$530,966,062	37.33%

Major Issue	Status	Comments/Actions/Planned Actions
<i>Delay in completion of PG&amp;E Intertie to Traction Power Substation (TPSS) No. 2.</i>	<i>TRC, the sub-contractor responsible for design and construction of the interties between the two (2) PG&amp;E substations and the JPB's two (2) TPSS, has declined to perform the construction work citing unacceptable business risks.</i>	<i>The construction of the southern intertie is required before the JPB's test track and Segment 4 can be electrified. This work is the responsibility of the Electrification contractor, but must be performed by a contractor acceptable to PG&amp;E. The JPB is attempting to encourage the sub-contractor to reconsider its position.</i>
Contractor Claims	The Electrification contractor has submitted a total of four claims; the most significant claim is associated with its efforts to provide Consistent Warning Time (CWT) at grade crossings. Other claims include denial of a Design Variance Request for alternate feeder and contact wire; percent of payment for CWT under Allowance Item #10; and costs for an alternate designer for Segment 1A.	<i>The JPB and the Electrification contractor have begun a technically facilitated mediation process in an effort to resolve these issues; the most recent meeting was held on December 16, 2019.</i>
Unresolved Schedule Impacts	The JPB is evaluating the Electrification contractor's Time Impact Analysis (TIA) for changes to the grade crossing warning system. The TIA and related documents allege a delay of 1,092 days. This delay is independent of delays associated with impacts to OCS foundation construction from differing site conditions; however, the two types of delays are not necessarily additive.	<i>The Electrification contractor submitted its November schedule update on 12-22-2019; this update includes CWT activities in Segments 1, 2, and 4. As noted above, the parties have begun a technically facilitated mediation process.</i>  <i>The JPB's most recent Monte Carlo schedule risk assessment projects a one-day delay to the FFGA Final Completion Date (FCD) at the p70 level and an FCD of August 1, 2022 at the p65 level, 21 days earlier than the FFGA FCD date.</i>
Technical Capacity and Capability	The System Integration Lead is only part-time and needs assistance.  Rail Operations has not hired an individual to be responsible for the new fleet of EMU vehicles.	Systems Integration is ranked #5 on the PCEP Risk Register.  <i>Rail Operations has recently begun recruiting for a Rail Activation Manager.</i>
OCS Construction Progress	Progress continues to be impacted by in-ground obstacles, causing redesign of some pole locations and inefficient foundation construction. <i>The contractor completed 152 on-track foundations in November 2019, then discontinued work for</i>	The JPB continues to meet weekly with the contractor on the progress of potholing and foundation construction. These efforts have had some beneficial impact on productivity. Various elements of OCS construction are now active in all four (4) Segments. <i>The</i>

	<i>two (2) weeks before resuming off-track construction in December 2019. 1,451 foundations, of a total of 3,152, have been completed through 12/8/2019.</i>	<i>current focus is on completion of work in Segments 3 and 4.</i>
Consistent Warning Time (CWT) for Grade Crossings	The Electrification contractor is moving forward with design using a dual speed-check solution which apparently will satisfy FRA and CPUC requirements.	The JPB and its contractor met with the Federal Railroad Administration (FRA) and the California Public Utilities Commission (CPUC) on September 19, 2019. The FRA requested a test plan for a complex, multiple crossing installation such as San Jose. FRA still needs to decide if the proposed dual speed check solution (2SC) is "new and novel technology;" a HQ decision is expected soon.
Systems Integration and Testing	A number of complex Systems Integration issues are currently unresolved, including: <ul style="list-style-type: none"> <li>• Lack of a grade crossing cutover plan.</li> <li>• Potential changes to the communications system.</li> <li>• Impacts from the JPB's PTC activities on the cutover of signal and grade crossing systems.</li> </ul>	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. <i>PCEP has identified John Moore as the single point of responsibility for systems integration at the PCEP level.</i> The PMOC continues to recommend additional resources for this vital activity.
Date of Next Monitoring Visit:		<i>TBD – March 2020</i>
Date of Next Quarterly Review Meeting:		<i>January 22, 2020</i>

**Core Accountability Table Footnotes:**

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

<sup>2</sup> 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.

<sup>3</sup> Work is defined as construction or manufacturing by Balfour Beatty, Stadler, PG&E, CEMOF, Tunnel Modification, and other Required Projects.

<sup>4</sup> Percentage is calculated based on a project value of \$1,930,670,934.

<sup>5</sup> Total construction contracts awarded to date (construction & vehicle contracts only) includes design costs and executed change orders.

**D. Major Problems and/or Issues**

- *TRC, the Electrification contractor's sub-contractor for design and construction of the PG&E interties has declined to perform the construction portion of the work, citing increased business risk. According to BBII's Traction Power Manager, it will take approximately six (6) months to build the south FMC to TPSS 2 Intertie once the work*

*begins. The JPB is looking for ways to encourage the sub-contractor to complete the work on both interties.*

- The Electrification contractor has now submitted a total of four claims; the most significant claim is associated with its efforts to provide CWT at grade crossings. Other claims include denial of a Design Variance Request for alternate feeder and contact wire; percent of payment for CWT under Allowance Item #10; and costs for an alternate designer for Segment 1A. *The JPB and the Electrification contractor have begun a technically facilitated mediation process in an effort to resolve these issues.*
- Two (2) major technical problems, the slow progress on OCS foundation construction, and the implementation of 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 November 2019, received December 20, 2019, shows a Substantial Completion date of January 27, 2024, compared to the contractual date of August 10, 2020. The contractor's November 2019 Schedule Update now includes additional CWT related activities in Segments 1, 2, and 4, not included in previous updates. The JPB rejected the Electrification contractor's November 2019 schedule update because it does not reflect the actual work sequence and durations of the activities on the critical path. The JPB's current MPS update, with a data date of December 1, 2019, reflects its assessment of realistic schedule activity durations and logic, and shows a substantial completion date of January 31, 2022. 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 appropriate 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 September 19, 2019. *The FRA requested test plans for complex crossing situations (several interrelated crossings) and this work was to be discussed at a meeting in November 2019; however, the meeting was cancelled by the FRA. The JPB is attempting to schedule a meeting with the FRA and CPUC on January 16, 2020. The contractor is proceeding with the design of selected crossings using the dual speed check (2SC) approach. The FRA must still issue its determination as to whether the proposed solution is "new and novel technology," in which case additional steps may be required.*
- Construction of the Overhead Contact System (OCS) is far behind initial projections due to encountering numerous obstructions in planned pole locations. Foundation construction, which controls the ultimate pace of the program, improved in late spring 2019 after the JPB loosened restrictions on work in adjacent work areas. *On-track foundation production improved in November 2019 and off-track work is underway in December 2019. The JPB continues to meet with the contractor weekly to plan upcoming work and address outstanding issues.*
- The PMOC remains concerned that the Contractor has not implemented procedures and processes 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 (TADs) and compute the associated costs. The prompt reconciliation and resolution of track access delays and the resulting costs continue to be a challenge. The JPB has not completed reconciliation of track access delay costs for 2018 or later, but the unreconciled numbers keep rising as the contractor's crew sizes increase. *The JPB is now focused on meeting regularly with the contractor to review the recent track access delays, and finding other methods to avoid or minimize the delays.*
- The JPB's Rail Operations group has entered the Revenue Service Demonstration (RSD) phase with its PTC system. Few problems are being encountered; however, the possibility remains that PTC issues may affect rail operations, resulting in track access or other impacts to the Electrification contractor. *Rail Operations is considering relaxing some JPB Roadway Worker restrictions that apply to contractors in an effort to improve construction productivity.*
- 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) have 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.

#### **E. Monitoring Plan Items**

- The PMOC will continue to 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 warning time at grade crossings, and completion of Time Impact Analyses related to the previous two (2) issues. *The PMOC provided comments on the draft materials submitted on October 17, 2019 and met to discuss next steps during the PMOC's December 2019 monitoring visit.* The PMOC will apply additional resources when a definitive schedule and/or an acceptable TIA is available from the JPB.
- The PMOC will continue to monitor the JPB's Systems Integration activities and the development of its Rail Activation Plan (RAP). *The RAP is moving forward and the PMOC will be providing lessons learned from another agency's recent Rail Activation meeting. Rail Operations has recently begun recruiting for a Director of Rail Activation.*
- The PMOC is reviewing the JPB's updated Project Management Plan, Rev. 2 (PMP); Project Controls Plan, Rev. 2; Document Control Plan, Rev. 1; Safety and Security Management Plan (SSMP), Rev. 5; Risk Identification and Mitigation Plan, Rev 2A; and several supporting procedures.
- The PMOC is planning to conduct a Safety and Security Adherence Review in early 2020.

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### 3) **Significant PMOC Observations**

*This monitoring report covers the period from September 26 through December 18, 2019. The report and contains information obtained during the on-site monitoring visit December 16-18, 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 received notification from the FTA in July 2019 that its environmental re-evaluation of the relocation of both PS-2 and PS-3 was approved.

##### **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:

- *Prepared and submitted the vehicle structural test report as required by the FRA in support of the Alternate Vehicle Technology waiver request; FRA confirmed receipt of the report.*
- *Submitted a waiver request to the FRA to allow use of alternate door release logic for the high-level doors.*
- Fourteen (14) final design reviews of the eighteen (18) major systems have been completed. The remaining four (4) reviews are conditionally approved and scheduled for completion in late 2019 and early 2020.
- Continue to support the JPB in discussions with the FRA on EMU compliance issues.
- Providing design support during construction of the CEMOF modifications. A full NTP was issued to the contractor on September 16, 2019.

**Electrification Services:** 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 late 2019.

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

*There is no significant change from the September 2019 Monitoring Report.*

- 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. Although the dual speed check (2SC) technical solution to the CWT issue has been generally approved, the FRA has stated that it will determine whether this is “new and novel” technology. The CWT issue continues to impact BBII’s schedule for signal system design and installation because design is only progressing on a few selective crossings.
- Supporting discussions and negotiations with BBII related to various change orders.
- Construction management (CM) activities by the Electrification Services team has ended. This work is now being performed by the Jacobs Project Management Company as the new CM contractor.
- 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, ARINC, and ProVen.

**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:

- TPSS-2 Pole Relocation (Design): Design changes due to the relocation of the Santa Clara Valley Transportation Authority (VTA)/ Bay Area Rapid Transit District (BART) Pole at TPSS-2 location. This scope is funded by the VTA.
- 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 complete and was included in the Tunnel Notching and Drainage Improvements contract awarded to ProVen.
- OCS foundations, as part of the South San Francisco Station construction in Segment 2: *This work is in construction and the PCEP work was 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.

### **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 JPB conducted training in preparing Independent Cost Estimates (ICE) and Cost or Price Analysis on December 4, 2019 in response to the recent FTA triennial review, although no deficiencies were found for PCEP activities.*

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 approximate amount of \$807,501 since September 2019. The COs cover an increase in tree pruning quantities, foundation inefficiencies in S2WA5, and TPSS 2 Pole Height Redesign.*

**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 change order (CO) to Stadler on October 28, 2019 in the amount of \$736,013 for Plugging of High-Level Doorways. A CO was approved in November 2019 for the deferred installation of the wheelchair lifts.*

**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 were performed as a Concurrent Non-Project Activity (CNPA) and was paid for by Caltrain. The JPB issued a Notice to Proceed to the contractor on October 6, 2018. Installation of the Overhead Contact System (OCS) in the tunnel bores was later added by Change Order.

**Used Electrified Locomotives:** The JPB, at its June 7, 2018 meeting, approved contracts to acquire and overhaul two (2) used electrified locomotives to perform initial testing of the electrification system. The locomotives arrived at Amtrak's yard in Oakland, CA, on June 6, 2019, and have been prepared for long term storage until needed for testing of the electrified system.

**CEMOF Modifications:** The JPB awarded a contract to ProVen Management, Inc. in the amount of \$6,550,777 to modify the Central Equipment Maintenance and Operations Facility (CEMOF) to accommodate the new EMUs. ProVen was issued a full Notice to Proceed (NTP) on September 16, 2019. The CEMOF contract is the last of the PCEP's major construction contracts.

### **Consultant Contracts:**

**On-call Construction Management Services for the PCEP:** The JPB awarded a five-year contract to Jacobs Project Management Company (Jacobs) of Oakland, CA in 2019 to support electrification construction, the tunnel notching contract, modifications to the CEMOF, reconstruction of the Santa Clara Drill Track, installation of mini-high block platforms, and other work, as needed.

**Upcoming Procurements:** The JPB has initiated the procurement process for a Pantograph Inspection System to be installed at the CEMOF.

## **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. 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.
- *Progressed the OCS design with BBII in all segments, which included submittal and review of Design Change Notices for revised foundation locations.*

- *Coordinated design review with local jurisdictions for the OCS, traction power facilities, and bridge attachments design, including responses to comments from jurisdictions.*
- *Received CPUC approvals on General Order 88B filings for grade crossing modifications in Segment 3 regarding the distance of foundations and poles from the crossings.*
- *Continued to work with PG&E and Silicon Valley Power (SVP) to finalize single-phase studies.*
- *The JPB has scheduled the first signals cutover for Phase 1 of Segment 4; the date is April 4, 2020. The cutover will be for the far south end of the PCEP.*
- Design of the 115 kV interconnections between Traction Power Substations 1 and 2 and the corresponding PG&E East Grand Avenue and FMC substations continues. This work is being designed by TRC, a PG&E approved consulting firm, as a subcontractor to BBII. *TRC has encountered some difficulty in acquiring the specified underground high voltage cable for a portion of the interconnection to TPSS 1. This cable is a long-lead item and if the issue is not resolved promptly, construction of this interconnection could be delayed.*
- The Electrification contractor has proposed a 2SC solution to provide appropriate warning time 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 JPB and its contractor met with the FRA and the CPUC on September 19, 2019, and during that meeting, the FRA requested test plans for the complex crossing situations (several interrelated crossings). *The FRA cancelled the follow-up meeting, which was to be held in November, and the JPB has proposed a new meeting date of January 16, 2020. The requested test plans will be shared with the FRA at that time. The FRA recently requested a Preliminary Hazard Analysis (PHA) for the 2SC solution. BBII previously developed a PHA for the 5-mph speed check solution and will revise it for the 2SC design.* The contractor is proceeding with the design of selected crossings using the 2SC approach, and the JPB continues to hold weekly meetings with the contractor in an effort to improve the overall performance of this critical activity. FRA Headquarters must still issue its determination of whether the 2SC solution is “new and novel technology,” and therefore, requires additional steps prior to its acceptance.

*Contractor Claims:* The Electrification contractor has submitted a total of four claims; the most significant claim is associated with its efforts to provide CWT at grade crossings, which is described in more detail below. Other claims include denial of a Design Variance Request for alternate feeder and contact wire; percent of payment for CWT under Allowance Item #10; and costs for an alternate designer for Segment 1A. *The JPB and the Electrification contractor have begun a technically facilitated mediation process in an effort to resolve these issues. The first substantive meeting was held on December 16, 2019, followed by a meeting with the signals sub-contractor on December 19, 2019. The next mediation session is scheduled for January 13, 2020.*

- The Electrification contractor has been reporting a delay to its substantial completion date for many months based on its alleged inability to begin work on the grade crossing warning system as planned in its baseline schedule. The delay has been day-for-day. The Electrification contractor submitted a delay claim on behalf of its signals’ subcontractor, and shortly thereafter, the submitted its Time Impact Analysis (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 consisting of \$71,882,763 in Direct Costs and \$167,667,445 in Delay Costs. The time impact presented in the letter is 1,092 calendar days, made up of 224 calendar days associated with Change Order No. 41 (the 5 MPH Solution) and 868 calendar days to perform the added scope or work. **[PMOC Note:** Prior to the development of the dual speed check solution, the contractor had been working on an approach which would have used a series of detectors to provide warning time based on train speeds in 5 mph increments. Change Order No. 41 was issued to the contractor for the direct cost of that work.] The amount of the subcontractor's claim mentioned above is included in the Change Order Cost Proposal. The JPB has denied the contractor's claim. The JPB is proceeding with a detailed review of the TIA. The TIA process is the first step in determining whether the contractor suffered a delay, who is responsible for the delay, whether there are offsetting delays, and whether the delay is excusable and/or compensable. Once the circumstances are determined, there may be opportunities to mitigate schedule impacts by a variety of techniques.

- The Electrification contractor submitted a Design Variance Request (DVR) in 2017 to substitute alternative products for the specified Autotransformer Feeder (ATF) Wire and Static Wire used in the OCS. The JPB reviewed the request in 2017, but never took the formal action required to approve the request. The JPB subsequently rejected the DVR. The contractor does not agree with the JPB's position and has submitted a claim for resolution.

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.
- *Continued to install OCS poles, down guys, and balance weights in Segment 4.*
- *Potholed at proposed OCS locations and utility locations in Segments 3 and 4 in advance of foundation installation. BBII and the JPB continued to resolve conflicts found during the potholing process, and continued designing solutions for those conflicts that cannot be avoided. The conflicts must be resolved before installation of foundations at those locations.*
- *Continued to install forms, rebar, and high-voltage cable at TPS-2.*
- *Continued to install ductbank and manholes, gantries, drainage, ground grid, and form and rebar work at TPS-1 (Segment 2).*
- *Continued to install ductbank and manholes at PS-6 (Segment 3).*
- *Continued grading work at PS-7 (Segment 4).*
- *Continued to install ductbanks and manholes at SWS-1 (Segment 3).*
- *Set Wayside Power Cubicle (WPC) 20 at Control Point (CP) Franklin (Segment 3).*
- *Continued to install signal ductbank and conduits at CP Shark (Segment 4).*
- *Installed signal cases at CP Ralston remote and CP Ralston main (Segment 2).*
- *Continued drilling of rails for impedance bond connections in Segments 1, 2, 3, and 4 at various control points and crossings.*
- *Continued installation of insulated joints (IJs) corridor wide.*

- Continued installation of bridge attachments in Segment 2.
- PG&E continued work at East Grand Avenue and FMC substations.
- Prepared Mountain View Siding for installation of foundations in Segment 3 Work Area 2.

**Table 1 – OCS Construction Progress (December 8, 2019)**

Segment	Work Area	Foundations			Poles		
		Required <sup>1,2,3</sup>	12/1-12/8	to Date	Required <sup>2</sup>	12/1-12/8	to Date
1	<b>Tunnels</b>	32	0	32	32	0	0
	<b>A</b>	309	0	0	259	0	0
	<b>B</b>	237	0	0	177	0	0
2	<b>5</b>	243 <sup>3</sup>	0	184	208	0	160
	<b>4</b>	314	0	243	253	0	186
	<b>3</b>	174 <sup>3</sup>	0	63	140	0	36
	<b>2</b>	246	0	78	205	0	60
	<b>1</b>	208	0	79	154	0	33
3	<b>2</b>	512	31	179	460	0	0
	<b>1</b>	390	0	353	311	18	18
4	<b>A</b>	244	0	156	180	0	107
	<b>B</b>	131	0	87	124	0	70
	<b>CEMOF</b>	112	0	0	102	0	0
<b>Total</b>		<b>3152</b>	<b>31</b>	<b>1451</b>	<b>2605</b>	<b>18</b>	<b>670</b>
<sup>1</sup> Foundations required do not match poles required as guy foundations are needed in some locations for extra support.							
<sup>2</sup> The number of required poles and foundations fluctuate due to design changes.							
<sup>3</sup> 55 foundations in S2WA5 will be installed by the South San Francisco contractor and 64 foundations in S2WA3 will be installed by the 25th Avenue contractor.							

### SCADA Contract

- The PCEP's Quality Manager conducted a design audit of the contractor and had no audit findings.
- Continued work on development of test procedures (ongoing).
- The JPB's Rail Operations group has imposed a moratorium on changes to the current signal system points list while it works through the early stage of Revenue Service Demonstration of the PTC system. This moratorium limits some aspects of design on the SCADA system, including testing, but the work does not appear on the project's critical path. The JPB will merge the databases once the moratorium is lifted, which is expected in December 2019.
  - **PMOC Observations:** Caltrain continues in the Revenue Service Demonstration (RSD) phase with its new Positive Train Control (PTC) system. Thus far, there have been few impacts to the PCEP as a result of PTC implementation.
  - The JPB did not achieve its goal of finalizing all Track Access Delay (TAD) costs through the end of 2018 by September 30, 2019. The JPB is re-evaluating some of the earlier determinations in light of additional information and the estimated cost for Q1 - 2018 decreased significantly from earlier projections. The JPB's current objective is to have regular meetings with the contractor to maintain progress on reconciliation. 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. No TAD information has been assembled for 2019.**

**Table 2 – Potential Track Access Delay and Cost**

<b>Period</b>	<b>Track Access Delay Time (Hrs:Min)</b>	<b>Potential Track Access Delay Cost</b>
2017-Q4	277:04	\$909,510
2018-Q1	145:00	\$510,000
2018-Q2	277:40	\$1,108,388
2018-Q3	421:00	\$765,000
2018-Q4	441:00	\$1,495,000

- The JPB reports that it is working with Operations and Transit America Services, Inc. (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.
- *Caltrain Operations is considering changes to its operating practices which could improve the contractors' track access and reduce track access delays and the resulting costs.*

**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 Communications Based Overlay Signal System (CBOSS) - Positive Train Control (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 Change Management Board (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.

## **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:

- *Negotiations continue with Willowbend Apartments (Segment 3).*
- *Preparation of First Written Offer package for KB Homes (Segment 4).*
- *Working with City of San Jose and Diridon Hospitality (Segment 4) to finalize design. Met with Diridon Hospitality and we are moving forward with redesign. An eminent domain action may be required on this property.*
- *Resolved encroachment issue and installed foundations on the Tripp parcel (Segment 4).*
- *Working with PG&E and VTA to gain access to their properties in Segment 4 for potholing. Finalizing appraisal map for PG&E property.*
- *Working with UPRR on encroachment permit and/or easement.*
- *Working with property owners for Segment 3 and 4 to enable potholing.*

- Reviewing acquisition options for Marchese parcel (Segment 4) with Santa Clara Valley Water District (SCVWD).
- Finalizing appraisal map for Britannia Gateway (Segment 1).
- Continue working with SVP in Segments 3 and 4 to de-energize and install foundations.

### Status of Real Estate Activities

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

**Table 3 – Real Estate Status (9-25-2019)**

Segment	No. of Parcels Needed <sup>1</sup>	Appraisals Completed	Acquisition Status	
			Escrow Closed <sup>5</sup>	Parcel Possession <sup>2</sup>
1	7 <sup>4</sup>	7	0	0
2	27	27	23	26
3	10	10	7	8
4	8 <sup>3</sup>	8	1	8
Additional Parcels	8	0	0	0
<b>TOTAL</b>	<b>60</b>	<b>52</b>	<b>31</b>	<b>42</b>

**Notes:**

1. During design development, the real estate requirements may adjust to accommodate design refinements. Parcel requirements will adjust accordingly. The table in this report reflects the current property needs for the Project.
2. Possession obtained either through acquisition of parcel, possession date in contract or Order for Possession through condemnation action.
3. Four (4) of the Segment 4 parcels are owned by PG&E.
4. All seven (7) parcels are owned by a single entity.
5. The JPB no longer reports the status of escrow activity; the information was current as of May 1, 2019.

- **PMOC Observations:** The progress of real estate acquisition continues to be slower than anticipated. Real Estate acquisition has not yet delayed the Electrification contractor’s ability to install foundations.
- The continued appearance of new or redefined parcels as a result of shifts in the placement of OCS poles is problematic if possession is needed before foundations can be constructed. The PMOC understands that BBII’s designers are attempting to avoid or minimize such situations.

### 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 City and County of San Francisco (CCSF) declined to approve an agreement for use of its eminent domain powers on behalf of the PCEP.

#### Utility Relocation Agreements

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

- Worked with all utilities on review of overhead utility line relocations based on the current design.
- Coordinated with PG&E and Silicon Valley Power on relocation and de-energization of parallel power facilities in Segment 3 to enable foundation construction and future pole installation.
- Continued to coordinate relocation by communication cable owners such as AT&T and Comcast.
- *Comcast has asked the JPB to assist with permits for San Jose, Palo Alto, and Redwood City.*
  - **PMOC Observation:** The JPB continues to coordinate closely with the various utility companies, especially on near term conflicts with construction activities.

The JPB 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. The parties disagreed on the allocation of costs for the work, and following discussions between the parties, PG&E filed an application with the CPUC for a cost allocation plan. A hearing before an Administrative Law Judge was set for October 10, 2019 in San Francisco; *no decision has been announced.*

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

*BBII's sub-contractor (TRC) for design and construction of the PG&E interconnections has declined to perform the construction portion of the work, citing unacceptable business risk.*

*TRC has agreed to complete purchase of two (2) of three (3) long-lead items. The remaining item is specialty underground cable to be installed as part of the interconnection to TPSS #1. The cable supplier requires that a manufacturer's representative be present during installation. The various parties had not found a solution at the time of the PMOC's visit. The JPB is attempting to find a way to encourage TRC to complete the work on both inerties. TRC had previously reported a shortage of qualified electricians due to PG&E's ongoing wildfire "hardening" activities in northern California. The date for PG&E's supply of permanent power to the PCEP is currently shown as September 9, 2021; this activity is on the project's critical path.*

#### California Public Utilities Commission (CPUC)

The CPUC is the FTA's Certified State Safety Oversight Agency (SSOA) for the State of California, and also has responsibility for grade crossing safety in the state. The PCEP's proposed solution to 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 submitted a test plan to the FRA and that plan is under review. *The JPB and its contractor met with the FRA and the CPUC on September 19, 2019 to discuss progress. The FRA has stated that it does not need to review the plans for each crossing, but will defer to the CPUC's judgement. The FRA requested a test plan for a complex, multiple crossing installation such as San Jose. That plan was to be discussed at a meeting in November 2019, however, the FRA cancelled the meeting. The JPB is attempting to arrange a meeting in January 2020 to continue the discussions. The JPB continues to file General Order (GO) 88B forms for each modified crossing for approval by the CPUC; these plans are developed in conjunction with the local jurisdictions. The CPUC has thus far approved six (6) crossings. The FRA does not approve the crossings, but has both regulatory and enforcement authority if the crossings do not perform as required by its regulations.*

#### Union Pacific Railroad (UPRR)

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

The 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 a few remaining poles with UPRR and is working with the railroad to resolve the issues.

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

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

The JPB has moved forward with a plan to relocate a number of the OCS poles to permit future curve-straightening by the CHSRA without impacting the electrification system. Straightening of some curves will allow the CHSRA to achieve higher operating speeds. Prior to the issuance of a change order to BBII, the CHSRA will complete an environmental assessment to ensure that there are no new or substantially significant environmental impacts beyond those that were environmentally cleared in the PCEP EIR and Environmental Assessment (EA). This documentation will be shared with the FTA. All costs associated with the pole relocation work will be paid for by the CHSRA.

#### Federal Railroad Administration (FRA)

The FRA has authority over the JPB's rail operations. As noted above and elsewhere in this report, the JPB is coordinating with the FRA on several issues, including technical issues related to the EMU vehicles, resolution of the CWT issue, and the agency's PTC program. Issues related to the EMU's are discussed in Section I of this report. The JPB continues to hold monthly conference calls with the FRA to discuss EMU issues and another call to discuss PTC progress.

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

The PMOC received an updated PMP and several sub-plans and procedures on May 17, 2019. The PMOC is in the process of reviewing the updated documents. The JPB's Rail Activation Committee (RAC) is continuing to work on its Rail Activation Plan (RAP). The RAP must be in place before testing of the new EMU's can begin. *The RAC is continuing to develop various sections of the RAP as well as the critical path schedule for rail activation activities. The PMOC has reviewed the schedule and provided comments to the RAC. The JPB's Chief*

*Operating Officer – Rail has recently begun recruiting for a Director, Rail Program Integration; one function of this position is to convene the RAC.*

### **C. Project Management Capacity and Capability**

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

- *Signal Engineer (Nino Genoese)*
- *Resident Quality Inspector (Anthony Kay)*
- *Office Engineer (Jane Huang)*
- *Office Engineer (Kyle Lima)*
- *Inspector (James Allen)*
- *Inspector (Jim Daly)*
- *Inspector (Chuck Warren)*
- *Inspector (Cameron Neghabat)*

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

- **PMOC Observations:** 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 had expected to re-baseline its Capital Cost Estimate in mid-2019 after it had assessed the cost and schedule impacts to the Electrification contract, had issued the CEMOF Modification contract, the last major construction contract, and completed its Monte Carlo risk assessment update to inform the contingency requirements. The CEMOF contract has been awarded and the Monte Carlo simulation has been completed and is under review by the PMOC. The JPB states that it recently completed its assessment of the costs related to the various delays asserted by the Electrification contractor.*

**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
<b>Total Project Cost (10 - 100)</b>			<b>1,805,211,052</b>	<b>1,930,670,934</b>	<b>1,930,670,935</b>

Note: Totals may not add due to rounding.

### Project Expenditures

The status of the PCEP budget and expenditures through October 31, 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 (11-30-2019)**

Description of Work	Approved Budget (A)	Cost This Month** (B)	Cost To Date (C)	Estimate To Complete (D)	Estimate At Completion (E) = (C) + (D)
<b>10 - GUIDEWAY &amp; TRACK ELEMENTS</b>	<b>\$28,524,610</b>	<b>\$0</b>	<b>\$23,009,375</b>	<b>\$5,615,235</b>	<b>\$28,624,610</b>
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)	\$2,500,000	\$0	\$66,807	\$2,533,193	\$2,600,000
10.07 Guideway: Underground tunnel	\$26,024,610	\$0	\$22,942,568	\$3,082,042	\$26,024,610
10.07 Allocated Contingency	\$0	\$0	\$0	\$0	\$0
<b>30 - SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS</b>	<b>\$7,050,777</b>	<b>(\$221,202)</b>	<b>\$1,250,438</b>	<b>\$5,803,827</b>	<b>\$7,054,266</b>
30.03 Heavy Maintenance Facility	\$6,550,777	(\$221,202)	\$1,250,438	\$5,303,827	\$6,554,266
30.03 Allocated Contingency	\$0	\$0	\$0	\$0	\$0
30.05 Yard and Yard Track	\$500,000	\$0	\$0	\$500,000	\$500,000
<b>40 - SITEMWORK &amp; SPECIAL CONDITIONS</b>	<b>\$265,429,560</b>	<b>\$5,684,242</b>	<b>\$150,128,456</b>	<b>\$118,968,194</b>	<b>\$269,096,649</b>
40.01 Demolition, Clearing, Earthwork	\$3,077,685	\$60,000	\$3,961,000	(\$883,315)	\$3,077,685
40.02 Site Utilities, Utility Relocation	\$91,128,599	\$4,421,533	\$69,437,753	\$21,717,947	\$91,155,599
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	\$0	\$3,800,000	\$994,473	\$4,794,473
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks	\$32,579,208	\$34,100	\$1,684,245	\$31,269,963	\$32,954,208
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	\$114,216,852	\$1,168,610	\$71,245,458	\$43,842,011	\$115,087,469
40.08 Allocated Contingency	\$20,610,000	\$0	\$0	\$20,410,000	\$20,410,000
<b>50 - SYSTEMS</b>	<b>\$521,476,559</b>	<b>\$6,170,723</b>	<b>\$119,460,312</b>	<b>\$419,460,661</b>	<b>\$538,712,973</b>
50.01 Train control and signals	\$99,483,668	\$2,531,096	\$23,027,513	\$78,919,469	\$101,946,982
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	\$72,744,787	\$859,571	\$29,406,908	\$55,623,198	\$85,030,106
50.03 Allocated Contingency	\$27,990,895	\$0	\$0	\$27,990,895	\$27,990,895
50.04 Traction power distribution: catenary and third rail	\$274,479,994	\$2,780,056	\$66,759,901	\$224,401,885	\$291,161,788
50.04 Allocated Contingency	\$14,194,011	\$0	\$0	(\$0)	(\$0)
50.05 Communications	\$5,455,000	(\$0)	\$57,989	\$5,397,011	\$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
<b>60 - ROW, LAND, EXISTING IMPROVEMENTS</b>	<b>\$35,675,084</b>	<b>\$119,218</b>	<b>\$18,516,266</b>	<b>\$17,158,818</b>	<b>\$35,675,084</b>
60.01 Purchase or lease of real estate	\$25,927,074	\$119,218	\$18,387,692	\$7,539,382	\$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	\$0	\$128,574	\$871,426	\$1,000,000
<b>70 - VEHICLES (96)</b>	<b>\$625,608,445</b>	<b>\$8,925,255</b>	<b>\$179,067,458</b>	<b>\$444,791,826</b>	<b>\$623,859,285</b>
70.03 Commuter Rail	\$592,277,622	\$8,925,255	\$178,529,179	\$412,633,943	\$591,163,027
70.03 Allocated Contingency	\$6,499,071	\$0	\$0	\$5,864,506	\$5,864,506
70.06 Non-revenue vehicles	\$8,067,821	\$0	\$538,280	\$7,529,541	\$8,067,821
70.07 Spare parts	\$18,763,931	\$0	\$0	\$18,763,931	\$18,763,931
<b>80 - PROFESSIONAL SERVICES (applies to Cats. 10-50)</b>	<b>\$330,222,946</b>	<b>\$3,022,490</b>	<b>\$287,523,474</b>	<b>\$63,118,806</b>	<b>\$350,642,280</b>
80.01 Project Development	\$130,350	\$0	\$280,180	(\$149,830)	\$130,350
80.02 Engineering (not applicable to Small Starts)	\$187,284,094	\$1,016,674	\$195,116,405	(\$2,349,490)	\$192,766,915
80.02 Allocated Contingency	\$5,043	\$0	\$0	\$282,474	\$282,474
80.03 Project Management for Design and Construction	\$74,332,188	\$1,297,016	\$68,518,752	\$20,434,256	\$88,953,008
80.03 Allocated Contingency	\$8,000,396	\$0	\$0	\$8,000,396	\$8,000,396
80.04 Construction Administration & Management	\$25,347,671	\$676,999	\$14,088,176	\$17,168,887	\$31,257,063
80.04 Allocated Contingency	\$17,867,277	\$0	\$0	\$11,957,888	\$11,957,888
80.05 Professional Liability and other Non-Construction Insurance	\$4,543,588	\$0	\$4,543,588	\$38,263	\$4,581,851
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	\$6,341,599	\$30,823	\$4,943,374	\$1,398,225	\$6,341,599
80.06 Allocated Contingency	\$556,000	\$0	\$0	\$556,000	\$556,000
80.07 Surveys, Testing, Investigation, Inspection	\$3,388,781	\$977	\$32,999	\$3,355,782	\$3,388,781
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
<b>Subtotal (10 - 80)</b>	<b>\$1,813,987,981</b>	<b>\$23,700,726</b>	<b>\$778,747,780</b>	<b>\$1,074,917,367</b>	<b>\$1,853,665,147</b>
<b>90 - UNALLOCATED CONTINGENCY</b>	<b>\$106,784,315</b>	<b>\$0</b>	<b>\$0</b>	<b>\$67,107,149</b>	<b>\$67,107,149</b>
<b>Subtotal (10 - 90)</b>	<b>\$1,920,772,296</b>	<b>\$23,700,726</b>	<b>\$778,747,780</b>	<b>\$1,142,024,516</b>	<b>\$1,920,772,296</b>
<b>100 - FINANCE CHARGES</b>	<b>\$9,898,638</b>	<b>\$0</b>	<b>\$5,920,070</b>	<b>\$3,978,568</b>	<b>\$9,898,638</b>
<b>Total Project Cost (10 - 100)</b>	<b>\$1,930,670,934</b>	<b>\$23,700,726</b>	<b>\$784,667,850</b>	<b>\$1,146,003,084</b>	<b>\$1,930,670,934</b>

**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.

**Table 6 – Project Funding Summary**

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

\*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 updates its MPS schedule monthly. The JPB had planned to re-baseline its current MPS earlier in 2019 to account for a number of significant changes including the contract award dates for the tunnel and CEMOF contracts; differing site conditions impacts on OCS construction; progress on the PG&E substations and interties; and implications of the CWT issue. The re-baselining was not accomplished as planned because the PCEP team did not receive an acceptable TIA (TIA 2) from the contractor for the delays associated with CWT. *The JPB initially rejected TIA 2 as submitted by the contractor; however, it is currently reviewing the TIA to better understand the contractor’s position.* The PMOC held preliminary discussions with the PCEP’s schedule management team on August 22, 2019, followed by a schedule workshop on September 24, 2019. The objective of the workshop was to gain a better understanding of the implications of the Electrification contractor’s claimed delays and potential impacts to the PCEP’s MPS. *The PCEP scheduling team provided an initial draft of its schedule analysis to the PMOC on October 17, 2019; the PMOC provided review comments to the team and met with the team during the PMOC’s December 2019 monitoring visit to discuss next steps. The JPB intends to complete its current work prior to QPRM No. 12 so that the Action Item can be closed.*

*The JPB’s internal schedule update as of November 30 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 most significant schedule change since the September 2019 monitoring report is the date for completion of Segment 4, and the overall completion of*

electrification efforts have been updated to reflect delays by the electrification contractor. Schedule variances noted in the November 30 update include:

1. Continued delays in design required by the 2SC solution for the signal system.
2. Unresolved design conflicts that are delaying OCS foundation installation.
3. Contractor not able to proceed with OCS foundation installation for two (2) weeks due to inability to order rebar in a timely manner.
4. Inability of the contractor to meet Buy America compliance for high voltage wire to support the TPS-1 interconnection.
5. Inability of the contractor to find a subcontractor to support construction of the TPS-2 interconnection.

Table 7 below, which is based on the MPS C18.10 with a Data Date of December 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 in Pueblo, CO	N/A	5/29/20 (P)	5/29/20 (P)
Arrival of First EMU at JPB	7/29/19	2-26-21 (P)	2-26-21 (P)
Final Engineering (FE) Completion:	04/03/18 (P)	3/31/21 (P)	3/31/21 (P)
Systems Integration Testing Completed:	01/29/19 (P)	1/31/22 (P)	1/31/22 (P)
Segment 4 Complete to Begin EMU Testing:	11/21/19	2/14/21 (P)	2/14/21 (P)
Completion of Interconnection from PG&E to TPSS 2	N/A	9/30/20 (P)	9/30/20 (P)
Design/Build Substantial Completion:	02/16/19 (P)	1/31/22 (P)	1/31/22 (P)
Conditional Acceptance of First EMU Trainset:		4/9/21	4/23/21 (P)
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:		2/1/22 (P)	2/1/22 (P)
Revenue Service Date (without Risk Contingency):	12/9/21 (P)	5/6/22 (P)	5/6/22 (P)
FFGA Final Completion Date:	05/07/20 (P)	8/22/2022 (P)	8/22/2022 (P)
<b>(P) Planned Date (A) Actual Date</b>			

Appendix E presents the PCEP’s summary schedule C18.10 as contained in its November 2019 Schedule Update.

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

- The Electrification contractor’s most recent Schedule Update Narrative for November 2019, received December 20, 2019, shows a Substantial Completion date of January 27, 2024, compared to the contractual date of August 10, 2020, or a total delay of 1265 days. According to the contractor’s November progress schedule narrative, the schedule now includes “changes to resequencing for all signal design Segments, the added CWT design for Segments 1, 2, and 4, and the added CWT procurement and construction time for

*Segment 4.” The JPB’s position is that the added activities reflect base contract work which the Contractor is required to complete by the contractual completion date. The JPB rejected the Electrification contractor’s November 2019 schedule update because it does not reflect the actual work sequence and durations of the activities on the critical path. The JPB’s current MPS update, with a data date of December 1, 2019, reflects its assessment of realistic schedule activity durations and logic, and shows a substantial completion date of January 31, 2022. The PMOC has not analyzed the contractor’s schedule, but expects that it is based on logic and durations assumptions similar to those the PCEP team identified as problematic during its recent schedule review.*

- 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 previously directed the Electrification contractor to proceed with the design of the grade crossing warning system using the 2SC approach to achieve acceptable warning time; however, design work using the 2SC solution is only moving forward on a limited number of crossings. The Electrification contractor submitted TIA 2 based on use of the 2SC solution; however, the initial submittal was rejected by the JPB because it lacked fundamental data. The JPB is currently analyzing TIA 2 using its own interpretations. The contractor has not submitted a TIA to account for the known delays to the OCS schedule due to Differing Site Conditions (DSCs), although the JPB has requested this information. 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 PCEP’s current schedule includes revised logic, referred to as Phased Revenue Service, related to the start of passenger service using the new EMUs. *The PMOC understands that the JPB intends to conduct a short period of pre-revenue operations following the completion of integrated testing, and then transition to revenue service using the EMUs that have been accepted.* This concept has not been described in detail, but is expected to be included in the Rail Activation Plan currently being prepared. *The JPB has determined that the Core Capacity requirements can be satisfied when fourteen (14) seven-car EMU trainsets are in revenue service. The Final Completion Date in the FFGA is August 22, 2022.*

#### **PMOC Observations:**

- The JPB has developed its own projections for the various impacts to the Electrification contractor’s schedule, including those associated with the CWT issue. These projections have been incorporated into the MPS and have resulted in changes to the anticipated completion dates for the OCS, for Substantial Completion of the Electrification contract, and for the start of Phased Revenue Service.
- *The PMOC provided comments on the draft schedule produced by the Rail Activation Committee, and discussed the comments with members of the RAC during its most recent visit. The RAC is considering the PMOC’s comments and will produce an update, which will be incorporated into the MPS. 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 underground obstructions and the pace of potholing work being implemented by the Electrification Contractor.
- 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, periodically halts and then re-starts foundation construction and pole erection after a sufficient number of cleared foundation locations are available to allow the work to proceed effectively. The contractor's productivity is also affected periodically by shortages of materials such as rebar cages for foundations.* 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.

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

The following quality management activities were reported for the PCEP:

- *A Corrective Action Request (CAR) was issued to BBII for continuing Non-Conformance Reports (NCR) without sufficient corrective action for issues concerning BBII field personnel working to designs/drawings that don't match the latest from the designer, PGH Wong.*
- *Conducted an audit of cable troughs in Segments 2 and 4.*
- *Conducted an audit of Wayside Power Cabinet (WPC) - 20 installation.*
- *Conducted audits of Collins Aerospace (Supervisory Control and Data Acquisition [SCADA]), Modern Railway Systems (MRS) and BBII Document Control.*
- *BBII submitted a response to JPB-issued Corrective Action Request (CAR).*
- *Five (5) BBII NCRs are awaiting closure.*
- *Tunnel Modification (Proven [PMI]) Corrective Action Request (CAR) remains open.*
- *EMU audit plan for Fiscal Year 2020 is under development; audits will be combined with repeat of First Article Inspections (FAIs) and other project needs.*
- *Stadler's response to CAR – 002 is under LTK review; CAR – 002 pertains to Production and Quality Assurance (QA) process deficiencies related to Altenrhein car shell manufacturing.*

- **PMOC Observations and Recommendations:** The PMOC has observed that there are gaps in the JPB's overall quality program with respect to areas involving the PCEP. The PMOC has brought these gaps to the attention of the JPB.

## 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. The start of construction activities at the CEMOF in September 2019 adds another area requiring attention by the safety team.

The PCEP's safety management team continues to hold regular monthly meetings of the Fire and Life Safety Committee (FLSC) 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 most recent meetings of both committees were held on December 11, 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 Observations:** The PMOC is concerned that the dispersion of construction activity throughout much of the 51-mile rail corridor, including several off-track locations, and the additional challenge of multi-shift activity, may exceed the current capacity of the safety team.
- 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. Caltrain's Rail Operations Department recently requested the interim removal of the two (2) on-board lifts until such time as the EMUs operate in blended service with the CHSRA trains. The justification for this request is that the space occupied by the on-board lifts will interfere with

the movement of passengers using the stairs where the lifts are installed. Further, the accommodation of passengers using mobility devices and wishing to use the restroom can be accomplished by de-boarding the passenger and repositioning the train at any station, a procedure currently in use. The change was approved by the Change Management Board at its September 2019 meeting.

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

## **H. Buy America**

- *The EMU vehicle consultant reports that Stadler's Buy America compliance continues to exceed the 60% requirement and that it plans to perform an intermediate Buy America audit in June 2020.*
- *The PMOC recently learned that the Electrification contractor is supplying primary traction power transformers that are manufactured in Europe. The PMOC has requested that the PCEP's QA Manager determine how this will affect the contractor's Buy America compliance requirement.*

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

Stadler reported the following progress on the vehicles:

- *22 of 133 car shells (first three 7-car trainsets) are in Salt Lake City (SLC) in incremental stages of completion. The six (6) remaining car shells from trainset 4 have been shipped and are en route to the Salt Lake City facility.*

- *Production of car shells at Stadler’s Altenrhein facility is halted temporarily, for a period of approximately ten (10) weeks, to allow production in Salt Lake City to catch up. Car shell production for the JPB is expected to resume in January 2020.*
- *Six (6) cars from the first trainset are now undergoing commissioning, and the seventh car is expected to be turned over to commissioning by Christmas. The cars move between final assembly and commissioning to resolve open issues and incorporate updates.*
- *Stadler reports that it has been able to stabilize the production schedule in the SLC facility after encountering some delays in November, and the Master Program Schedule is largely unchanged. Stadler augmented its Salt Lake City workforce with personnel from its European facilities.*
- *The FRA plans to conduct another on-site design review at Stadler’s Salt Lake City facility in April 2020. This on-site design review will be an opportunity to see an assembled seven-car train, including the bike cars, and review the internal signage and placards. This design-review follows a very productive 2-day FRA Compliance Review of the EMU design conducted in Stadler’s Salt Lake City (SLC) facility on September 10 – 11, 2019.*

### **Regulatory Issues**

The FRA, in a letter dated June 8, 2018, denied the JPB’s request for a waiver on the use of the high-level doors for emergency egress from the EMUs. The JPB previously developed an alternative to address this possible outcome. The alternative is complicated and requires creation of an interim configuration that replaces the high-level doors with an emergency exit window. *The JPB’s Change Management Board, as noted above, approved the installation of temporary panels in place of the high-level doors until the trains operate in blended service with the CHSRA.*

The JPB’s Change Management Board, at its September 2019 meeting, approved the JPB’s request for a change order that will install additional flip-up seats and railings in each of its bike cars. The flip-up seats and railings accommodate access to emergency egress windows in the bike cars. This request came from Caltrain’s bicycle user community. The 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 will have an opportunity to view this configuration on its next visit to Stadler’s Salt Lake City facility in April 2020.*

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 has also created a “Watch List” of possible occurrences such as currency fluctuations or labor shortages to better understand the PCEP’s risk position.

The JPB held an EMU Risk Refresh on December 18, 2018 and an Electrification Risk Refresh on January 15, 2019. Following the Risk Refresh meetings, the JPB’s risk team re-ran the

Monte Carlo simulation models for both cost and schedule risk. *The PMOC received a copy of the PCEP Risk Register Refresh Technical Memorandum on October 17, 2019, and is reviewing the document. The report states that the direct cost of risk (without considering schedule related costs) was reduced from approximately \$150 million to \$100.2 million at the p65 (65% probability) level, and the Final Completion Date (FCD) at the p65 level is August 1, 2022. The report states that the confidence level was adjusted from the p70 level, used previously, to the p65 level, based on the progress of the PCEP and a better understanding of the remaining risks.*

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 of top risks since the previous monitoring report.

(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.

(314) Design and construction of grade crossing modifications that meets stakeholder and regulatory requirements may cost more than was budgeted and delay the revenue service date.

(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.

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

(273) Contractor generates hazardous materials that necessitates proper removal and disposal in excess of contract allowances and expectations.

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

(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 meetings 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 will continue to focus on the PCEP's schedule performance, including the JPB's mitigation of delays to OCS foundation installation, implementation of the 2SC solution to provide the required warning time at grade crossings, and completion of Time Impact Analyses related to the previous two (2) issues. *The PMOC provided comments on the draft materials submitted on October 17, 2019 and met to discuss next steps during the PMOC's December 2019 monitoring visit.* The PMOC will apply additional resources when a definitive schedule and/or an acceptable TIA is available from the JPB.
- The PMOC will continue to monitor the JPB's Systems Integration activities and the development of its Rail Activation Plan (RAP). *The RAP is moving forward and the PMOC will be providing lessons learned from another agency's recent Rail Activation meeting.*
- The PMOC is reviewing the JPB's updated Project Management Plan, Rev. 2 (PMP); Project Controls Plan, Rev. 2; Document Control Plan, Rev. 1; Safety and Security Management Plan (SSMP), Rev. 5; Risk Identification and Mitigation Plan, Rev 2A; and several supporting procedures.
- *The PMOC is planning to conduct a Safety and Security Adherence Review in early 2020.*

6) **Action Items**

Table 8 shows the status of Action items as of December 17, 2019.

**Table 8 – Action Items**

No.	Action Item	Discussion	Agreed Due Date	Responsibility Agency/Name	Status
9.02	Complete an inventory of any on-board or wayside equipment purchased for CBOSS which will not be used for PTC.	General status of on-board and wayside equipment provided.	NLT QPRM #11	Bouchard	<i>Status Unchanged</i>
10.01	Verify the extent of TASI Involvement in implementing the planned Grade Crossing Solution.	It's unclear whether anyone has discussed with TASI its role in servicing and implementing the CWT solution.	QPRM #11	Bouchard	<i>Status Unchanged</i>
10.02	Verify that FRA does not consider 2 Speed Check solution New and Innovative Technology.	<i>PCEP last met with FRA and CPUC on 9/19/2019. November 2019 meeting cancelled by FRA.</i>	ASAP	Larano	<i>JPB requested meeting January 16, 2020 at PCEP. FRA HQ to provide a decision in early 2020.</i>

No.	Action Item	Discussion	Agreed Due Date	Responsibility Agency/Name	Status
10.03	Implement a Schedule Containment Workshop prior to QPRM #11.	Bring PMOC schedule expertise to assist in working through TIAs	<i>QPRM #12</i>	Eidlin	<i>JPB provided draft documents October 17, 2019. PMOC provided comments and further discussions held 12/17/19. JPB to finalize before QPRM #12.</i>
10.04	JPB to add a bullet to the PG&E slide for future meetings updating the status of the Continuing Control issue. Close item 5.05	Indicate what direction resolution is progressing	<i>QPRM #12</i>	Funghi/Larano	<i>Conference call held December 11, 2019. JPB to report at QPRM #12.</i>
<i>11.01</i>	<i>JPB to provide the FTA and the PMOC with the final Risk Update report which includes the results of the 12/2018 and 1/2019 risk workshops and the Monte Carlo analysis.</i>	<i>The report is under final internal review.</i>	<i>10/25/2019</i>	<i>Larano</i>	<i>Report submitted October 17, 2019</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
2SC	<i>Two Speed Check Crossing Approach Warning System</i>
AAR	Association of American Railroads
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ARINC	Aeronautical Radio, Incorporated
ATF	Autotransformer Feeder
ATP	Alternate Technical Proposal
BAAQMD	Bay Area Air Quality Management District
BAFO	Best and Final Offer
BART	Bay Area Rapid Transit District
BBII	Balfour-Beatty Infrastructure, Inc.
BGSP	Broadway Grade Separation Project
Caltrans	California Department of Transportation
CAR	Corrective Action Request
CBOSS	Communications Based Overlay Signal System
CC	FTA's Core Capacity Improvement Program
CCB	Change Control Board
CCIP	Contractor Controlled Insurance Program
CCSF	City and County of San Francisco
CEL	Certified Elements List
CEMOF	Central Equipment Maintenance and Operations Facility
CEQA	California Environmental Quality Act
CGA	Construction Grant Agreement
CHSRA	California High-Speed Rail Authority
CIG	FTA's Capital Investment Grant Process
CIL	Certifiable Items List
CMB	Change Management Board
CM/GC	Construction Manager/General Contractor
CNPA	Concurrent Non-Project Activity
CO	Change Order
CP	Control Point
CPUC	California Public Utilities Commission
CSCG	City/County Staff Coordinating Group
CWT	Constant Warning Time
D-B	Design-Build
DBB	Design-Bid-Build
DBE	Disadvantaged Business Enterprise
DEIR	Draft Environmental Impact Report
DQP	Design Quality Plan
DRB	Disputes Review Board
DSC	Differing Site Condition

Acronyms	List of Terms
DSDC	Design Support During Construction
DVR	Design Variance Request
EA	Environmental Assessment
EAC	Estimate at Completion
EE	Entry into Engineering
EIR	Environmental Impact Report
EIS	Environmental Impact Study
EMU	Electric Multiple Unit Rail Vehicle
ETB	Electrified Trolley Buses
<i>FAI</i>	<i>First Article Inspection</i>
FCD	Final Completion Date
FD	Final Design
FEIR	Final Environmental Impact Report
FERC	Federal Energy Regulatory Commission
FFGA	Full Funding Grant Agreement
<i>FLSC</i>	<i>Fire Life Safety Committee</i>
FMOC	Financial Management Oversight Consultant
FMP	Fleet Management Plan
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FWO	First Written Offer
FY	Fiscal Year
GO	General Order (issued by the CPUC)
HSR	High-Speed Rail
ICE	Independent Cost Estimate
I-ETMS	Interoperable Electronic Train Management System
IFB	Invitation for Bids
IFC	Issued for Construction
IGA	Inter-Governmental Agreement
IJ	Insulated Joints
Cal ISO	California Independent System Operator
ITCS	Incremental Train Control System
JPB or PCJPB	Peninsula Corridor Joint Powers Board
Jacobs	Jacobs Project Management Company
KKCS	Kal Krishnan Consulting Services, Inc.
LNTP	Limited Notice to Proceed
LONP	Letter of No Prejudice
LPMG	Local Policy Makers Group
MCC	Management Capacity and Capability
MOU	Memorandum of Understanding
MPS	Master Project Schedule
<i>MRS</i>	<i>Modern Railway Systems</i>

Acronyms	List of Terms
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
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
RAC	Rail Activation Committee
RAP	Rail Activation Plan
RAMP	Real Estate Acquisition Management Plan
RE	Resident Engineer
RFI	Request for Information
RFMP	Rail Fleet Management Plan
RFP	Request for Proposal
RIMP	Risk Identification and Mitigation Plan
RON	Resolution of Necessity (for Eminent Domain purposes)
ROW	Right of Way
RSD	Revenue Service Date or Revenue Service Demonstration
RWIC	Roadway Worker in Charge
RWQCB	Regional Water Quality Control Board
SamTrans	San Mateo County Transit District
SCADA	Supervisory Control and Data Acquisition
SCC	Standard Cost Category
SCVTA/VTA	Santa Clara Valley Transportation Authority
SCVWD	Santa Clara Valley Water District
SF	City of San Francisco
SFCTA	San Francisco County Transportation Authority

Acronyms	List of Terms
SFMTA	San Francisco Municipal Transportation Agency
SHPO	State Historic Preservation Office
SJ	City of San Jose
SLC	<i>Salt Lake City</i>
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
SSOA	State Safety Oversight Agency
SVP	Silicon Valley Power
TAD	Track Access Delay
TASI	Transit America Services, Inc.
TEAM	Transportation Electronic Award Management System
TIA	Time Impact Analysis
TIRCP	Transportation and Intercity Rail Capital Program
TJPA	Transbay Joint Powers Authority
TPS	Traction Power System
TPSS	Traction Power Substation
TrAMS	Transportation Award Management System
TTCI	Transportation Technology Center, Inc.
TVA	Threat and Vulnerability Analysis
TVM	Transit Vehicle Manufacturer
UPRR	Union Pacific Railroad
USDOT	U. S. Department of Transportation
USFWS	United States Fish and Wildlife Service
VE	Value Engineering
VECP	Value Engineering Change Proposal
VTA	Santa Clara Valley Transportation Authority
WPC	Wayside Power 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

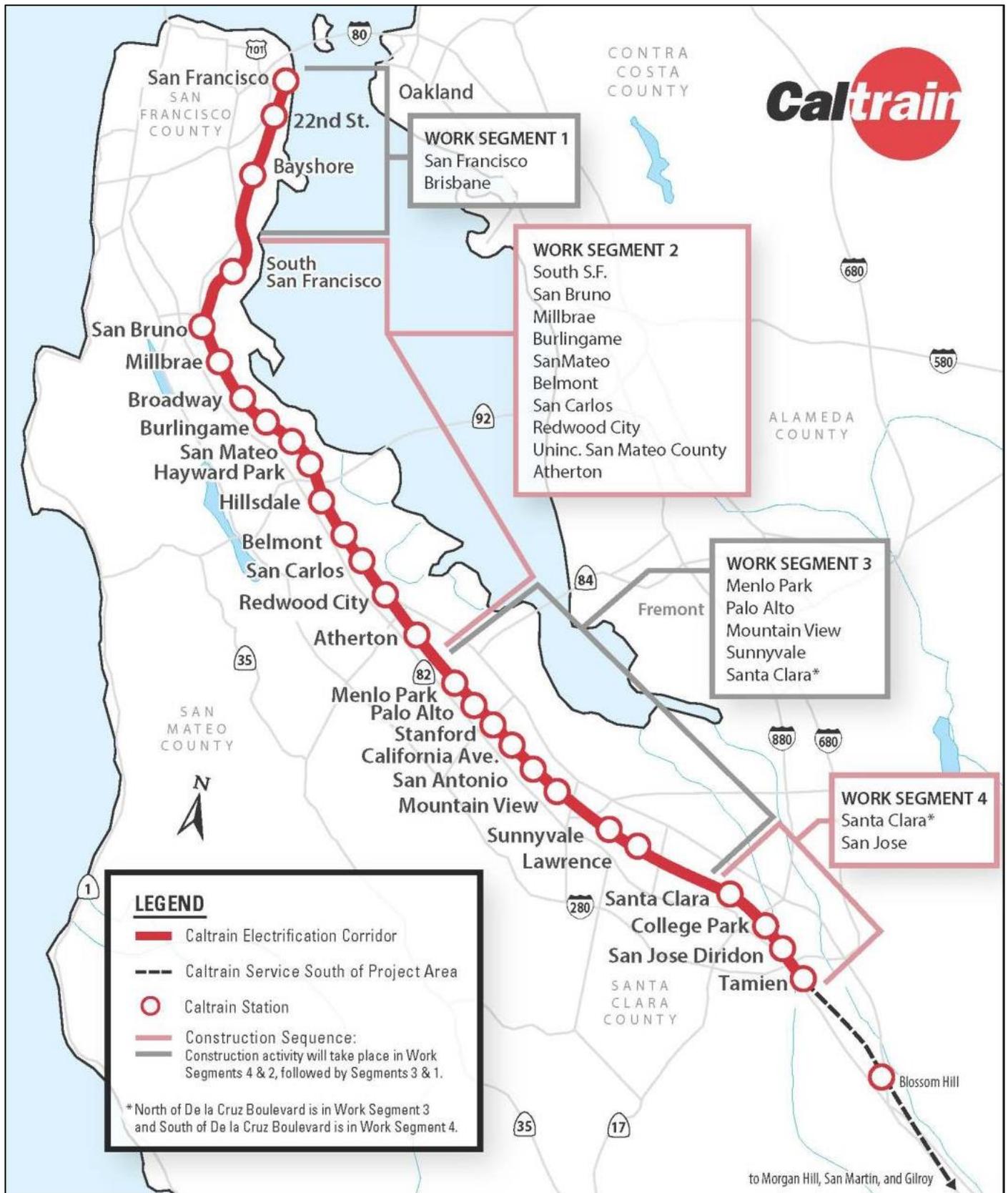
Area of Focus	Y/N	Notes/Status
<b>Safety and Security Authority</b>		
Is the Project Sponsor subject to 49 CFR Part 659 state safety oversight requirements?	Y	
Has the state designated an oversight agency as per 49 CFR Part 659.9?	Y	California Public Utilities Commission is SSOA; the FTA certified California's 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	<i>QPRM No. 11 was held October 8, 2019</i>
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.
<b>SSMP Monitoring</b>		
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.

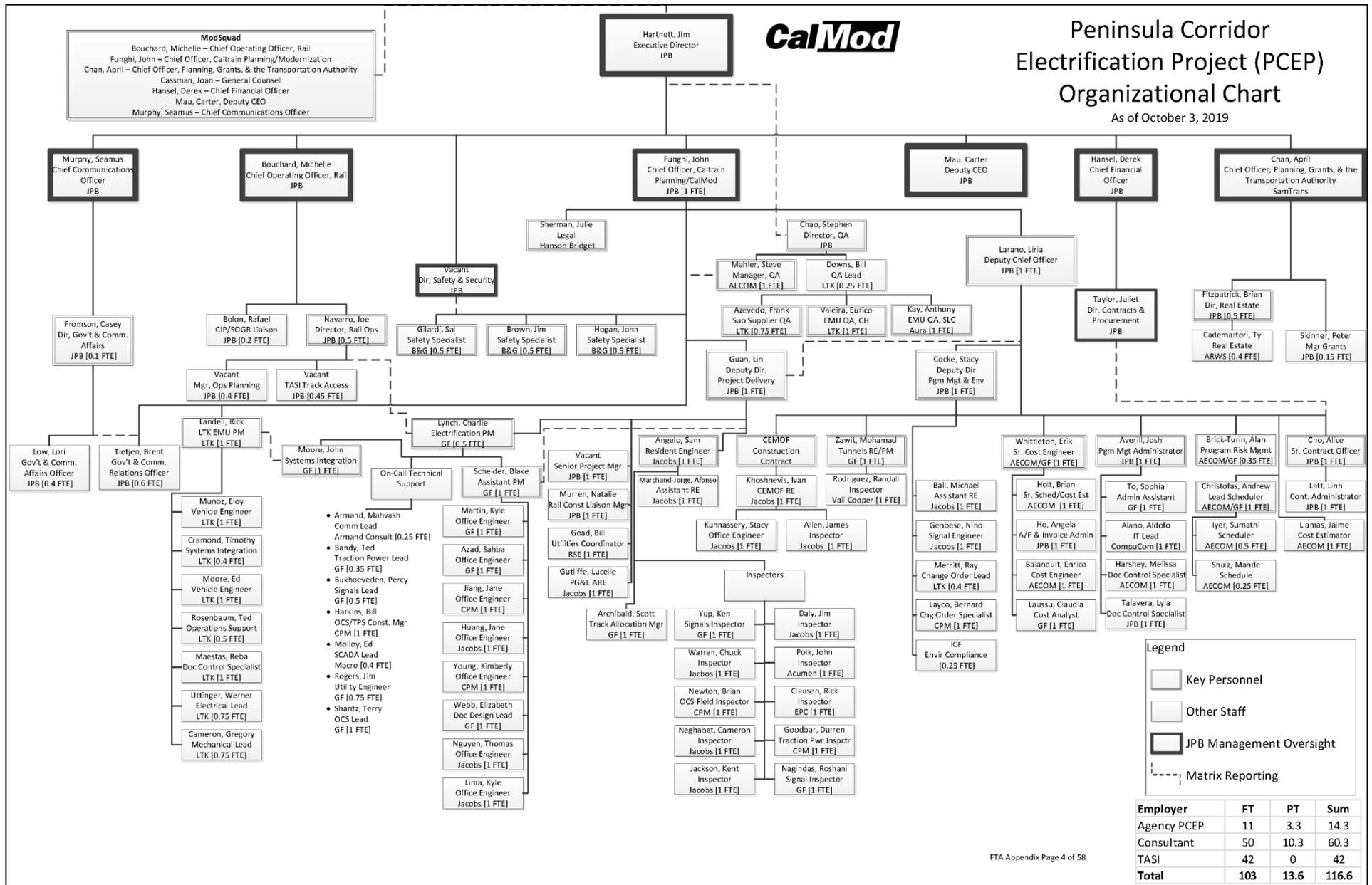
Area of Focus	Y/N	Notes/Status
Has the Project Sponsor demonstrated through meetings or other methods the integration of safety and security in the following: <ul style="list-style-type: none"> <li>• Activation Plan and Procedures</li> <li>• Integrated Test Plan and Procedures</li> <li>• Operations and Maintenance Plan</li> <li>• Emergency Operations Plan</li> </ul>	Y Y N N	A Rail Activation Plan is currently being developed for initial testing and operation of the new EMUs. The Rail Activation Committee has been meeting regularly since May 2019 and an outline and preliminary Rail Activation Schedule have been prepared. 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.
<b>Construction Safety</b>		
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
<b>Federal Railroad Administration</b>		
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: 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. 11 on October 8, 2019.

Appendix C: Project Map

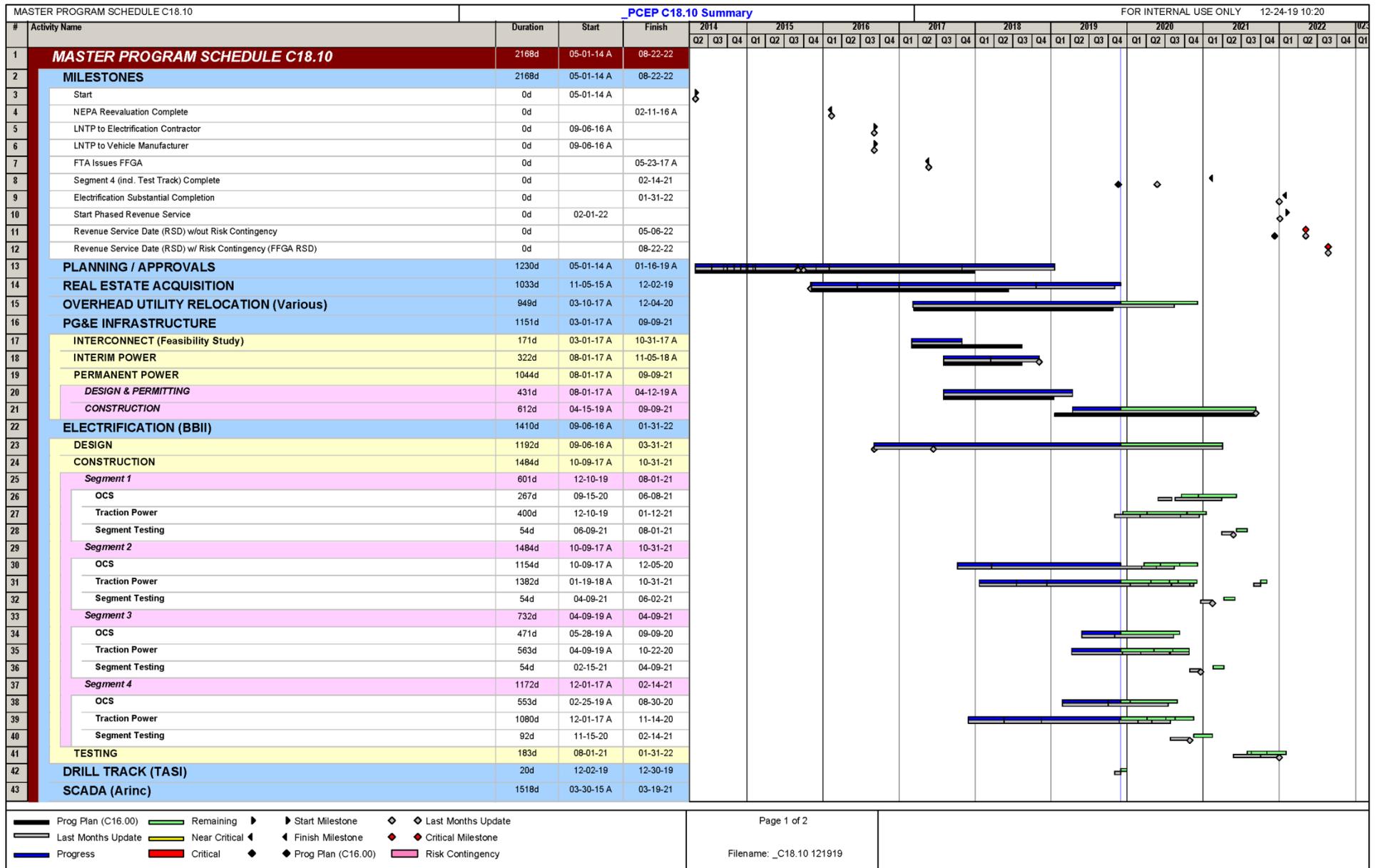
**Figure 1**  
**Peninsula Corridor Electrification Project Map**



# Appendix D: PCEP Organization Chart



# Appendix E: Summary Project Schedule





# Appendix F: Top Project Risks

Program Risk Register															
Version Date: December 13, 2019 – Top Risks										1	2	3	4	5	
										LOW	MEDIUM	HIGH	VERY HIGH	SIGNIFICANT	
										Probability					
										Cost					
										Schedule					
										< 10%	10% - 50%	50% - 75%	75% - 90%	> 90%	
										< \$500 K	\$500 K - \$2 M	\$2 M - \$10 M	\$10 M - \$20 M	\$20 M - \$50 M	
										< 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	RECORD	BRANDING						
313	R	Elect.	Construction	Contractor incorrect sequencing of utility locates, preliminary design, final design, and foundation construction may result in inefficiencies in construction, redesign, and reduced production rates.	Delay and additional cost for rework.	T	5	4	4	40	DB	Completion of construction of foundations	Mitigations revised per Risk Assessment Committee - 7/31/2019		<p>Challenge is to have sufficient number of potholes complete before advancing foundation work.</p> <p>Need to staff with more potholing crews than foundation crews. Off-track and on-track foundation operations proceeding. Success in Segment 3. Segment 2 and 4 - many conflicts with a proposed time to resolve. Office engineering staff supporting Balfour. Conflicts must be coordinated with the owning authority to develop an escalation mitigation.</p> <p>Conflicts with signal cable - need to determine if cable is in service or not. If not - cut. If in service - look for slack to move out of the path of the foundation.</p> <p>- C. Lynch 7/19/2019</p> <p>Revised to include communication between contractor and sub-contractors per Risk Assessment Committee - 8/27/19.</p>
303	R	Elect.	Physical Site	Event of differing site conditions and associated redesign efforts results in delays to the completion of the electrification contract and increases program costs.	More defining site conditions and longer to resolve. Extends construction of foundations and the OCS system and results in less efficient construction of foundations.	T	5	3	4	38	Guen	Completion of last foundation	Risk description reviewed and revised per Risk Assessment Committee - 7/31/2019.		<p>Project team continues to meet with the contractors on a weekly basis and each individual Segment team meet on a daily basis for resolution of conflicts.</p> <p>Revised utility marking procedures have been implemented. Project team also continues to conduct pre-drilling checklists to decrease the risk of finding main issues when the drilling starts.</p> <p>JPB and the contractor continues to hold regular workshop meetings to discuss path forward for foundations, including the potential to increase pothole resources.</p> <p>- L. Guen 12/9/2019</p>
314	R	Elect.	Construction	The contractor may not complete and install signal design including CIVT modifications within budget and schedule.	Delay and additional cost for rework.	T	4	4	4	32	DB	Substantial Completion/Revenue Service	Added as replacement for Risk #279 per Risk Assessment Committee 7/31/2019.		See Risk #279 for status prior to rewording and addition of this risk. Reworded and regraded - 10/22/19
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 cost.		4	4	3	28	Guen	Completion of Construction			<p>Moving forward. Obs also proposed working with BBI on the putting together specific operations work plans together for construction activities to further help reduce potential for track access delays.</p> <p>No new updates.</p> <p>- Lin G. 10/21/2019</p> <p>No new updates.</p> <p>- Lin G. 11/25/2019</p>
223		Elect.	Contracting	Major program elements may not be successfully integrated with existing operations and infrastructure in advance of revenue service.	Proposed changes resulting from identification may not be fully and properly integrated into existing system. Rework resulting in cost increases and schedule delays.	T	5	2	3	25	Moore	Revenue Service Date	Risk #264 was retired and incorporated into this risk per Risk Assessment Committee - 8/9/2018		<p>Meeting scheduled for 11/18/19. "Go-live meeting." Will address rail activation, noting that rail activation is an agency responsibility.</p> <p>BBI concerns about how BBI is integrating across their disciplines.</p> <p>Awaiting feedback from PRA on CIVT. PRA canceled the last meeting and JPB is trying to resolve. Contractor continues to resist doing work without additional funds.</p> <p>Chad Tysdale - PRA regional Inspector, wants to know how CIVT will be tested. Awaiting response from BBI. PRA has not made final determination on acceptability of new application of grandfathered equipment." May be need Robert H safety review.</p> <p>- J. Moore 11/18/2019</p>
287		Elect.	Construction	Potential that modifications to the PTC database and signal software are not completed in time for delivery and testing.	Failure to follow the Configuration Management process will result in delays to completing PCEP signal delivery. This could delay milestone completion as well as project substantial completion.		4	2	4	24	Moore	Completion of Construction	Reassigned to J. Moore per Risk Assessment Committee - 8/29/2018		<p>Awaiting submittal of software from Balfour. PTC team leading up to revenue service demonstration.</p> <p>Little progress on "scope gap." Considering using RBE to do the WDU mapping task, assuming they have sufficient manpower. Will be an additional cost to the project 1248</p> <p>- J. Moore 7/30/2019</p>

# Program Risk Register

Version Date: December 13, 2019 - Top Risks

	1	2	3	4	5
<b>Probability</b>	<b>LOW</b>	<b>MEDIUM</b>	<b>HIGH</b>	<b>VERY HIGH</b>	<b>SIGNIFICANT</b>
<b>Cost</b>	< 10%	10% - 50%	50% - 75%	75% - 90%	> 90%
<b>Schedule</b>	< \$500 K	\$500 K - \$2 M	\$2 M - \$10 M	\$10 M - \$20 M	\$20 M - \$50 M
	< 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	PRIORITY						
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 well before they are needed for construction 2. Expedite development of plats and legal 3. Enter into work directives for appraisal and acquisition before parcels are identified	Completion of Construction	Design change necessitated by UP and PG&E requests in Segment 4. May not be able to procure property in time for construction. - B. Ritzpatrick 4/17/2019 No change - B. Ritzpatrick 5/28/2019 No change - B. Ritzpatrick 7/16/2019 No change - B. Ritzpatrick 8/27/2019 No change - B. Ritzpatrick 10/1/2019 No change - B. Ritzpatrick 10/7/2019		Design change necessitated by UP and PG&E requests in Segment 4. May not be able to procure property in time for construction. - B. Ritzpatrick 4/17/2019 No change - B. Ritzpatrick 5/28/2019 No change - B. Ritzpatrick 7/16/2019 No change - B. Ritzpatrick 8/27/2019 No change - B. Ritzpatrick 10/1/2019 No change - B. Ritzpatrick 10/7/2019
273	R	Elect. Construction	Contractor generates hazardous materials, that necessitates proper removal and disposal in excess of contract allowances and expectations.	Delay to construction while removing and disposing of hazardous materials resulting in schedule delay, increased construction costs, and schedule delay costs.	T	8	3	1	20	DB/CIV		Completion of Construction			Risk is being realized. CMB has authorized an amount from contingency.
308	R	Elect. Contracting	Rejection of DVR for ATF and static wires results in cost and schedule impacts to PCBP.	Delay and delay claims	T	8	2	2	20	Fungli	The JRB is utilizing OCE Design Engineers to perform in-situ reviews of the BBI pole re-designs to insure design optimization to minimize additional costs.	Installation of wire in all segments.			Questions from HERRA have been resolved; none outstanding to our knowledge. Bant and executive permitting process to Balfour, which was expected today. Those include CIVT and preliminary line team. Will be attended by attorneys from both sides. - J. Fungli 10/4/2019 Claim will go to technical mediation process. Some funds have been reserved to cover additional costs. - J. Fungli 11/19/2019
298	R	Elect. Construction	Changes to PTC implementation schedule could delay completion of the electrification work. Cost and schedule of BBI contract could increase as a result of change in PTC system.	1. Changes in details could affect what Balfour provides; could delay timing for testing; could change books that PRA had to review. 2. Full integrated testing between BMU and wireline 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 delay timing for testing; could change books that PRA had to review. 2. Full integrated testing between BMU and wireline 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 JRB risk and DB risk per Risk Assessment Committee - 2/27/2018		No change - PTC is still trying to implement their Revenue Service Demonstration to the PRA. PCBP will be coordinating track time for construction and testing with the PTC project. They will move their (likely) have priority. - C. Lynch 6/17/2019 No change - C. Lynch 7/25/2019

## 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 15 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.