



# Modernization Program

Peninsula Corridor Electrification Project (PCEP)



# January 2017

# Monthly Progress Report

January 31, 2016



## Funding Partners



FTA Core Capacity

FTA Section 5307 (Environmental / Pre Development only)

FTA Section 5307 (EMU only)



Prop 1B (Public Transportation Modernization & Improvement Account)

Caltrain Low Carbon Transit Operations Cap and Trade



Prop 1A

High Speed Rail Cap and Trade



Carl Moyer Fund



Bridge Tolls Funds (RM1/RM2)



SFCTA/SFMTA



San Mateo (SMCTA) Contribution

SMCTA Measure A



VTA Measure A

Santa Clara (VTA) Contribution



San Francisco Contribution

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## **1.0 BACKGROUND**

Over the last decade, Caltrain has experienced a substantial increase in ridership and anticipates further increases in ridership demand as the San Francisco Bay Area's population grows. The Caltrain Modernization (CalMod) Program, scheduled to be implemented by 2020, will electrify and upgrade the performance, operating efficiency, capacity, safety, and reliability of Caltrain's commuter rail service.

The Peninsula Corridor Electrification Project (PCEP) is a key component of the CalMod Program and consists of converting Caltrain from diesel-hauled to Electric Multiple Unit (EMU) trains for service between the San Francisco Station (at the intersection of Fourth and King Streets in San Francisco) and the Tamien Station in San Jose. Caltrain will continue Gilroy service and support existing tenants.

An electrified Caltrain will better address Peninsula commuters' vision of environmentally friendly, fast and reliable service. Electrification will modernize Caltrain and make it possible to increase service while offering several advantages in comparison with existing diesel power use, including:

- **Improved Train Performance, Increased Ridership Capacity and Increased Service:** Electrified trains can accelerate and decelerate more quickly than diesel-powered trains, allowing Caltrain to run more efficiently. In addition, because of their performance advantages, electrified trains will enable more frequent and/or faster train service to more riders.
- **Increased Revenue and Reduced Fuel Cost:** An electrified Caltrain will increase ridership and fare revenues while decreasing fuel costs.
- **Reduced Engine Noise Emanating from Trains:** Noise from electrified train engines is measurably less than noise from diesel train engines. Train horns will continue to be required at grade crossings, adhering to current safety regulations.
- **Improved Regional Air Quality and Reduced Greenhouse Gas Emissions:** Electrified trains will produce substantially less corridor air pollution compared with diesel trains even when the indirect emissions from electrical power generation are included. Increased ridership will reduce automobile usage, resulting in additional air quality benefits. In addition, the reduction of greenhouse gas emissions will improve our regional air quality, and will also help meet the State's emission reduction goals.

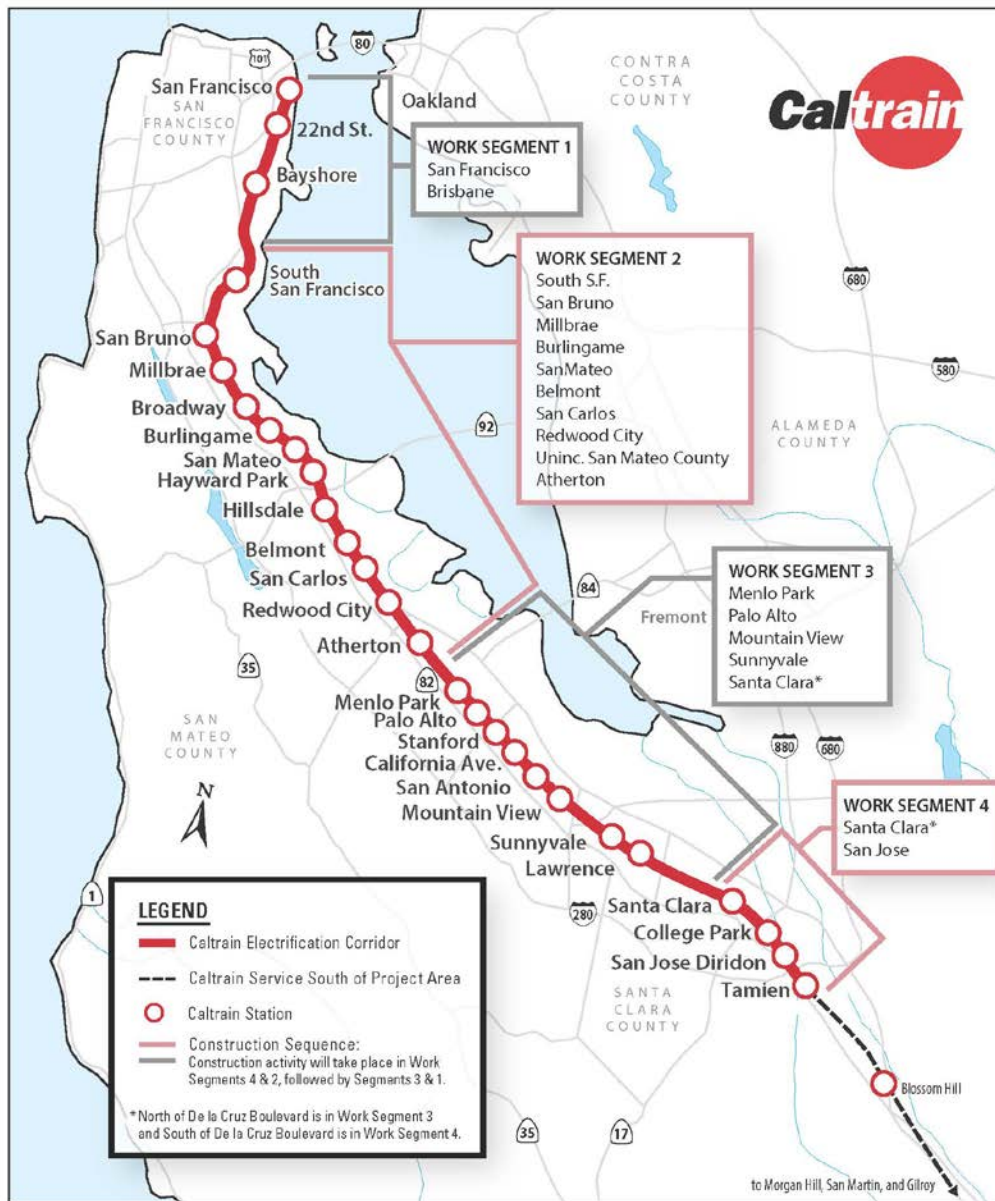
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**2.0 EXECUTIVE SUMMARY**

The Monthly Progress Report is intended to provide an overview of the PCEP and provide funding partners, stakeholders, and the public an overall update on the progress of the project. This document provides information on the scope, cost, funding, schedule, and project implementation. Work along the Caltrain Electrification Corridor has been divided into four work segments as shown in Figure 2-1. PCEP activities are described and summarized by work segments.

**Figure 2-1 PCEP Work Segments**



## **Peninsula Corridor Electrification Project**

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### **Monthly Progress Report**

In January, the Federal Transit Administration (FTA) finalized the Full Funding Grant Agreement (FFGA) for \$647 million in Core Capacity funding, which was submitted for the mandatory 30-day Congressional review period.

The PCEP team continues work with Balfour Beatty Infrastructure, Inc. (BBI) on 65% design and field investigations. The PCEP and BBI teams hold regular workshop meetings to discuss design related topics. The 65% Overhead Catenary System (OCS) typical design was submitted for review in January. In conjunction with field investigations performed by BBI, protocol-level surveys for a sensitive avian species were initiated at previously identified potential habitat locations and inspections of overpasses and bridges were initiated in order to determine the potential for nesting swallows. An architectural historian also continued to take photos and document site conditions at a number of historic railroad stations in support of historic documentation required as part of the Mitigation Monitoring and Reporting Program (MMRP).

The PCEP team has continued to work with Stadler on the technical aspects of the project. The PCEP team continues to address system-wide interface issues involving the emerging EMU design and the existing wayside infrastructure, the Electrification Project, the Communications Based Overlay Signal System (CBOSS) Project, and the Centralized Equipment Maintenance and Operations Facility (CEMOF) Design Upgrade. The PCEP team advanced the conceptual design to consider alternatives for the modification of CEMOF. The alternatives are under review with Caltrain Operations.

#### **2.1 Schedule**

The Revenue Service Date (RSD) in the Master Program Schedule (MPS) remains unchanged. Without adjustment for contingency, the RSD is forecast as August 2021. With the addition of approximately five months of contingency to account for potential risk to the project, the RSD is anticipated as December 2021. Table 2-1 provides a summary of the current schedule and milestones.

#### **2.2 Budget**

A summary of the overall budget and expenditure status for the PCEP is provided in Table 2-2 below.

#### **2.3 Board Actions**

At the January 5, 2017 Board meeting, there were several items related to the PCEP:

- Informational item on the status of the FFGA
- Unanimous support affirming the Caltrain Modernization Program (includes PCEP) oversight protocol
- Unanimous support approving and ratifying the Caltrain Modernization (includes PCEP) Insurance Program at a total premium Cost Not to Exceed \$4,305,769 for a six-year term

- Unanimous support authorizing execution of a funding agreement with the California State Department of Transportation for a \$20 million Transit Intercity Rail Capital Program Grant for the PCEP

The agenda and meeting minutes for the January meeting can be found at the link below:

[http://www.caltrain.com/Assets/\\_Agendas+and+Minutes/JPB/Board+of+Directors/Agendas/2017/2017-01-05+JPB+Agenda.pdf%20](http://www.caltrain.com/Assets/_Agendas+and+Minutes/JPB/Board+of+Directors/Agendas/2017/2017-01-05+JPB+Agenda.pdf%20)

*(Note: For viewers accessing the link above electronically, please cut and paste the link into a browser if it does not direct you immediately to the document.)*

**Table 2-1 Schedule Status**

Milestones <sup>1,2</sup>	Program Plan	November	December
Full Notice to Proceed to Electrification Contractor	N/A	03/01/2017	03/01/2017
Full Notice to Proceed to EMU Manufacturer	N/A	03/01/2017	03/01/2017
Start of Electrification Major Construction	03/20/2017	07/24/2017	07/24/2017
First 8 Miles of Electrification Complete to Begin Testing	04/08/2019	10/08/2019	10/08/2019
Delivery of 1 <sup>st</sup> Vehicle	06/25/2019	07/30/2019	07/30/2019
Start Pre-Revenue Operations	09/08/2020	09/22/2020	09/22/2020
Potential Limited Service	12/31/2020	12/31/2020	12/31/2020
RSD (w/ Risk Contingency)	12/30/2021	12/30/2021	12/30/2021

Notes:

<sup>1</sup> Milestones reported on this table may differ from the current schedule. As the schedule continues to be refined over the coming months to incorporate approved baseline schedules from the Electrification and EMU contractors, changes to milestones will be thoroughly vetted prior to reflecting those changes in the Monthly Report.

<sup>2</sup> Program Plan only considered an NTP. It did not account for an LNTP and FNTP.

**Table 2-2 Budget and Expenditure Status**

Description of Work	Budget	Cost This Month	Cost To Date	Estimate To Complete	Estimate At Completion
	(A)	(B)	(C)	(D)	(E) = (C) + (D)
Electrification Subtotal	\$ 1,316,125,208	\$ 10,553,561	\$ 139,305,584	\$ 1,176,819,624	\$ 1,316,125,208
EMU Subtotal	\$ 664,127,325	\$ 728,450	\$ 18,623,598	\$ 645,503,727	\$ 664,127,325
<b>PCEP TOTAL</b>	<b>\$ 1,980,252,533</b>	<b>\$ 11,282,011</b>	<b>\$ 157,929,181</b>	<b>\$ 1,822,323,351</b>	<b>\$ 1,980,252,533</b>

**2.4 Government and Community Affairs**

A number of community relations and outreach events took place during the month of January. PCEP team gave a total of seven presentations and participated/attended two stakeholder meetings related to PCEP. Third party stakeholders (SMCTA, SFCTA, MTC, and SCVTA) took actions in support of the PCEP.

### **3.0 ELECTRIFICATION – INFRASTRUCTURE**

This section reports on the progress of the Electrification, Supervisory Control and Data Acquisition (SCADA), and Tunnel Modification components. A brief description on each of the components is provided below.

#### **3.1 Electrification**

The Electrification component of the PCEP includes the installation of 138 miles of single-track and overhead contact system (OCS) for the distribution of electrical power to the EMUs. The OCS will be powered from a 25-kilovolt (kV), 60-Hertz (Hz), single phase, alternating current supply system consisting of two traction power substations (TPS), one switching station (SS), and seven paralleling stations (PS). Electrification will be performed using a design-build (DB) delivery method.

##### **Activity This Month**

- The PCEP team continued working with BBI on 65% design and field investigations. The PCEP and BBI teams hold regular workshop meetings to discuss design related topics. The 65% OCS typical design was submitted for review in January.
- BBI continued conducting utility surveys, pothole location layouts, and geotechnical boring layouts. Physical geotechnical boring and cone penetrometer tests (CPT) on the Caltrain right-of-way (ROW) continued in Segments 1 and 3. Potholing of utilities at proposed OCS locations began in Segment 2.
- The PCEP team also continued to review requests for information (RFIs) and submittals from BBI.
- Coordination efforts with PG&E continued for infrastructure improvements and traction power substation interconnects. Scoping documents prepared by PG&E were received in January and are under review by the PCEP team.

##### **Activity Next Month**

- The PCEP team will continue to work with BBI on design and field investigation activities. The 65% submittals for OCS design in Segment 2 are expected in February.
- Geotechnical investigations are expected to be completed in February. Potholing activities in Segments 2 will continue in the upcoming months.
- Coordination efforts will continue with PG&E on interconnection design and final design for PG&E infrastructure. The PCEP and BBI teams are in the process of designing the 115 kV interconnection between PG&E and Caltrain's future substations.

### **3.2 Supervisory Control and Data Acquisition (SCADA)**

SCADA is a system that monitors and controls field devices for electrification, including substations, paralleling stations and sectionalization. SCADA will be integrated with the base operating system for Caltrain Operations and Control, which is the Rail Operations Center System (ROCS).

#### **Activity This Month**

- Activity continues to be limited to providing technical support on an as needed basis to the Caltrain Contract and Procurement (C&P) Department for the procurement of the SCADA system.
- Technical documents and cost estimates were updated and provided to the C&P Department.

#### **Activity Next Month**

- PCEP staff will continue to support Caltrain Contracts and Procurement Department on providing technical support during the procurement process.
- Issue procurement package to sole source supplier for proposal.

### **3.3 Tunnel Modification**

Tunnel modifications will be required on the four tunnels located in San Francisco. This effort is needed to accommodate the required clearance for the OCS to support electrification of the corridor. Outside of the PCEP scope, Caltrain Engineering and Construction has requested the PCEP team to manage completion of design and construction management for the Tunnel 1 and Tunnel 4 Drainage Rehab Project. The Drainage Rehab Project is funded separately from PCEP and will be a Design-Bid-Build (DBB) construction package. Construction will occur concurrently with the Electrification contractor's efforts in Segment 1.

#### **Activity This Month**

- PCEP team continued coordination efforts with the design team on drawings and specifications on Tunnel 1 and Tunnel 4 Drainage Rehab projects.
- PCEP team continued coordination efforts with Union Pacific Railroad (UPRR) and other stakeholders
- The PCEP team continues to progress 95% design drawings and specifications for tunnel modification.

#### **Activity Next Month**

- PCEP staff will review and resolve comments on 95% design drawings and specifications.

## **4.0 ELECTRIC MULTIPLE UNITS**

The EMU procurement component of the PCEP consists of the purchase of 96 Stadler EMUs. The EMUs will consist of both cab and non-cab units configured as 16 six-car units. Power will be obtained from the OCS via roof-mounted pantographs which will power the axle-mounted traction motors. The EMUs will replace a portion of the existing diesel locomotives and passenger cars currently in use by Caltrain.

### **Activity This Month**

- The PCEP team facilitated a weeklong, in-person working session with Stadler to discuss system safety and security, quality management, master program schedule, a variety of technical issues, and Caltrain Public Outreach Group needs. In addition, Stadler met with Caltrain and CalMod executives, and further analyzed Caltrain onboard train operations and passenger patterns. A visit to Caltrain's CEMOF was also conducted for Stadler to become more familiar with the facilities' capabilities and improvements necessary to maintain the EMUs.
- Stadler continued to progress numerous management submittals, including a Master Program Schedule, an updated Contract Deliverables Requirement List (CDRL), and updated System Safety and Quality Assurance Plans. The PCEP team is currently reviewing these submittals and working with Stadler to finalize these deliverables within the next month.
- Weekly conference calls were held with Stadler, Caltrain Operations, Maintenance and Safety and Security group representatives. The PCEP team also conducted a more in-depth Monthly Progress Review Meeting.
- The PCEP team continues to address system-wide interface issues involving the emerging EMU design and the existing wayside infrastructure, the Electrification Project, the CBOSS Project, and the Centralized Equipment Maintenance and Operations Facility (CEMOF) design upgrade.
- The PCEP team and Stadler conducted in-depth reviews of the virtual reality mockup as well as the cab and console mockup.
- The PCEP team and Stadler participated in numerous coordination meetings regarding the EMU design to support Caltrain's Operation and Maintenance objectives plus upcoming public outreach initiatives.

### **Activity Next Month**

- PCEP will review and approve several documents including: the Quality Plan, the Master Project Schedule, the System Safety Plan and CDRL. PCEP's approval of the Master Program Schedule and Quality Plan are prerequisites for upcoming milestone payments to Stadler.
- Conceptual Design Reviews (CDRs) are to be conducted with Stadler on car body, truck and coupler-draft gear equipment.

**4.1 Centralized Equipment Maintenance and Operations Facility (CEMOF) Modifications**

The Centralized Equipment Maintenance and Operations Facility (CEMOF) Modifications project will provide safe work areas for performing maintenance on the new EMUs.

**Activity This Month**

- The PCEP team advanced the conceptual design to consider alternatives for the modification of CEMOF. The alternatives continue to be reviewed with Caltrain Operations.

**Activity Next Month**

- Continue with development of conceptual design alternatives.



## **5.0 SAFETY**

Safety and Security requirements and plans are necessary to comply with applicable laws and regulations related to safety, security, and emergency response activities. Safety staff coordinates with contractors to review and plan the implementation of contract program safety requirements. Safety project coordination meetings continue to be conducted on a monthly basis to promote a clear understanding of project safety requirements as defined in contract provisions and program safety documents.

### **Activity This Month**

- Safety staff continued to review BBI and Stadler's safety and security contract documentation deliverables to ensure they meet PCEP requirements. Safety staff has been facilitating meetings with BBI and Stadler to advance project safety and security program implementation.
- Field visits were conducted to work sites to ensure that the Site Specific Work Plan (SSWP) was being followed by BBI, Stadler, and their subcontractors.
- A Safety & Security Certification Review Committee (SSCRC) meeting was held on January 26, 2017. Monthly meetings will be held as the project continues.
- A two-day Safety and Security workshop was held with the Stadler representatives to discuss safety and security requirements and expectations.
- The PCEP team met with the San Francisco Municipal Transportation Agency (SFMTA) to discuss the 16<sup>th</sup> street crossing in compliance with environmental mitigation measures, which call for technical coordination with the PCEP and SFMTA regarding re-routing of the 22 electric trolley bus.

### **Activity Next Month**

- Monthly meetings for SSCRC and Fire/Life Safety & Security Committee (FLSSC) will be held.
- All staff safety meetings will be held with PCEP, BBI employees and subcontractors to reinforce the importance of safety in the field.
- Follow-up meetings to finalize the preliminary hazards analysis (PHA) are scheduled for early February.
- Site visits to BBI subcontractor work areas for potholing operations are planned

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**6.0 QUALITY ASSURANCE**

The Quality Assurance (QA) staff performs technical reviews for planning, implementing, evaluating, and maintaining an effective program to verify that all equipment, structures, components, systems, and facilities are designed, procured, constructed, installed, and maintained in accordance with established criteria and applicable codes and standards throughout the design, construction, startup and commissioning of the PCEP.

**Activity This Month**

- An audit of BBI’s design quality control and the OCS 65% design package was conducted and yielded three Findings and three Observations.
- An audit of Parikh Geotechnical Labs was conducted and yielded five Findings.
- QA review of Stadler’s BBI’s Quality Management Plan (QMP) was conducted. The QA team provided comments and closure of those comments is pending.
- Staff meetings with BBI QA/QC management and Stadler project and oversight representatives began.
- QA staff submitted to PCEP Management a QA Resource Plan for 2017 and beyond. This included a recommendation and request for an Independent QA Testing and Inspection Lab and a QA Engineer.
- Closure of all outstanding NCRs and all Findings from the Internal Document Control Audit.

Table 6-1 below provides details on the status of audits performed through the reporting period.

**Table 6-1 Quality Assurance Audit Summary**

Quality Assurance Activity	This Reporting Period	Total to Date
Internal Audits Conducted	0	16
External Audits Conducted	2	2
Audit Findings Issued	8	14
Audit Findings Open	8	8
Audit Findings Closed	6	6
Non-Conformances Open	0	0
Non-Conformances Issued	0	4
Non-Conformances Closed	1	4

**Activity Next Month**

- Three audits are planned and scheduled: Signet Testing Lab, Construction Testing Services, and Design Package for Traction Power System at 65%.
- QA review of Stadler’s QMP revision for EMU procurement.

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- Regularly scheduled design reviews will begin on project design packages and will continue through the late summer.

**7.0 SCHEDULE**

The schedule provided in this Monthly Progress Report is the approved schedule from December 2016, due to the timeframe necessary to update and approve the schedule. As indicated in Table 7-1, the Revenue Service Date (RSD), which is the date in which the project is deemed completed, remains unchanged in the Master Program Schedule (MPS). Without adjustment for contingency, the RSD is forecast as August 2021. With the addition of approximately five months contingency to account for potential risk to the project, the RSD is anticipated as December 2021. A summary of the overall schedule status for the PCEP is provided in Table 7-1, which provides comparisons between the baseline schedule (Program Plan), the previous update (November) and the current update (December) to capture any potential changes in the schedule. A complete schedule can be found in Appendix B.

Items listed in Table 7-2 show the critical path activities/milestones for the PCEP. Table 7-3 lists near-critical activities on the horizon.

**Notable Variances**

There were no notable variances this month.

**Table 7-1 Schedule Status**

Milestones <sup>1,2</sup>	Program Plan	November	December
Full Notice to Proceed to Electrification Contractor	N/A	03/01/2017	03/01/2017
Full Notice to Proceed to EMU Manufacturer	N/A	03/01/2017	03/01/2017
Start of Electrification Major Construction	03/20/2017	07/24/2017	07/24/2017
First 8 Miles of Electrification Complete to Begin Testing	04/08/2019	10/08/2019	10/08/2019
Delivery of 1 <sup>st</sup> Vehicle	06/25/2019	07/30/2019	07/30/2019
Start Pre-Revenue Operations	09/08/2020	09/22/2020	09/22/2020
Potential Limited Service	12/31/2020	12/31/2020	12/31/2020
RSD (w/ Risk Contingency)	12/30/2021	12/30/2021	12/30/2021

Notes:

<sup>1</sup> Milestones reported on this table may differ from the current schedule. As the schedule continues to be refined over the coming months to incorporate approved baseline schedules from the Electrification and EMU contractors, changes to milestones will be thoroughly vetted prior to reflecting those changes in the Monthly Report.

<sup>2</sup> Program Plan only considered an NTP. It did not account for an LNTP and FNTP.

**Table 7-2 Critical Path Summary**

<b>Activity</b>	<b>Start</b>	<b>Finish</b>
Electrification Design to Begin Major Construction	09/06/2016	07/21/2017
EMU Design to Delivery of First Car body	09/06/2016	10/13/2017
Electrification OCS Construction	07/24/2017	02/26/2020
Electrification Acceptance & Integrated Testing	02/26/2020	04/25/2020
PG&E Complete Infrastructure Upgrades to Provide Permanent Power <sup>1</sup>	08/31/2020	08/31/2020
Vehicle Manufacturing & Assembly to Provide First 5 Trainsets	11/13/2017	09/09/2020
Pre-Revenue Operations	09/22/2020	12/10/2020
Potential Limited Service <sup>1</sup>	12/31/2020	12/31/2020
RSD w/out Risk Contingency <sup>1</sup>	08/16/2021	08/16/2021
RSD w/ Risk Contingency <sup>1</sup>	12/30/2021	12/30/2021

<sup>1</sup>Milestone activity

**Table 7-3 Near-Term, Near-Critical with Less Than Three Months of Float**

<b>WBS</b>	<b>Activity</b>	<b>Responsibility</b>
FTA	Path to Full Funding Grant Agreement (FFGA)	Project Delivery
Utilities	PG&E Scoping & Preliminary Design	Project Delivery
Utilities	Overhead Utility Relocation	Project Delivery

**8.0 BUDGET AND EXPENDITURES**

The summary of overall budget and expenditure status for the PCEP is shown in the following tables. Table 8-1 reflects the Electrification budget, Table 8-2 reflects the EMU budget, and Table 8-3 reflects the overall project budget.

**Table 8-1 Electrification Budget & Expenditure Status**

Description of Work	Budget (A)	Cost This Month (B) <sup>1</sup>	Cost To Date (C) <sup>2</sup>	Estimate To Complete (D)	Estimate At Completion (E) = (C) + (D)
<b>ELECTRIFICATION</b>					
Electrification <sup>3</sup>	\$ 696,610,558	\$ 8,034,625	\$ 63,490,500	\$ 633,120,058	\$ 696,610,558
Tunnel Notching	\$ 11,029,649	\$ -	\$ -	\$ 11,029,649	\$ 11,029,649
Real Estate	\$ 28,503,369	\$ 271,019	\$ 5,671,755	\$ 22,831,614	\$ 28,503,369
Private Utilities	\$ 63,515,298	\$ 276,074	\$ 3,651,752	\$ 59,863,547	\$ 63,515,298
Management Oversight <sup>4</sup>	\$ 141,526,164	\$ 1,299,612	\$ 63,292,881	\$ 78,233,283	\$ 141,526,164
Executive Management	\$ 7,452,866	\$ 92,101	\$ 2,819,674	\$ 4,633,192	\$ 7,452,866
Planning	\$ 7,281,997	\$ 42,389	\$ 4,255,771	\$ 3,026,226	\$ 7,281,997
Community Relations	\$ 2,789,663	\$ 45,199	\$ 902,277	\$ 1,887,386	\$ 2,789,663
Safety & Security	\$ 2,421,783	\$ 13,240	\$ 498,410	\$ 1,923,372	\$ 2,421,783
Project Management Services	\$ 19,807,994	\$ 141,004	\$ 7,113,835	\$ 12,694,159	\$ 19,807,994
Engineering & Construction	\$ 11,805,793	\$ 36,074	\$ 1,881,588	\$ 9,924,206	\$ 11,805,793
Electrification Engineering & Management	\$ 50,461,707	\$ 405,437	\$ 15,564,570	\$ 34,897,137	\$ 50,461,707
IT Support	\$ 331,987	\$ -	\$ 331,987	\$ -	\$ 331,987
Operations Support	\$ 1,445,867	\$ 26,633	\$ 382,843	\$ 1,063,024	\$ 1,445,867
General Support	\$ 4,166,577	\$ 49,083	\$ 1,300,258	\$ 2,866,319	\$ 4,166,577
Budget / Grants / Finance	\$ 1,229,345	\$ 23,406	\$ 231,257	\$ 998,088	\$ 1,229,345
Legal	\$ 2,445,646	\$ 364,404	\$ 2,042,789	\$ 402,857	\$ 2,445,646
Other Direct Costs	\$ 5,177,060	\$ 60,642	\$ 1,634,262	\$ 3,542,798	\$ 5,177,060
Prior Costs 2002 - 2013	\$ 24,707,878	\$ -	\$ 24,333,358	\$ 374,520	\$ 24,707,878
TASI Support	\$ 55,275,084	\$ 500,000	\$ 1,106,670	\$ 54,168,414	\$ 55,275,084
Insurance	\$ 4,305,769	\$ -	\$ 1,155,769	\$ 3,150,000	\$ 4,305,769
Environmental Mitigations	\$ 14,972,645	\$ 75,000	\$ 472,000	\$ 14,500,645	\$ 14,972,645
Required Projects	\$ 17,337,378	\$ -	\$ 367,028.00	\$ 16,970,350	\$ 17,337,378
Maintenance Training	\$ 1,021,808	\$ -	\$ -	\$ 1,021,808	\$ 1,021,808
Finance Charges	\$ 5,056,838	\$ 97,230	\$ 97,230	\$ 4,959,608	\$ 5,056,838
Contingency	\$ 276,970,649	\$ -	\$ -	\$ 276,970,649	\$ 276,970,649
Owner's Reserve	\$ -	\$ -	\$ -	\$ -	\$ -
<b>ELECTRIFICATION SUBTOTAL</b>	<b>\$ 1,316,125,208</b>	<b>\$ 10,553,561</b>	<b>\$ 139,305,584</b>	<b>\$ 1,176,819,624</b>	<b>\$ 1,316,125,208</b>

Notes regarding tables above:

1. Column B "Cost This Month" represents the cost of work performed this month.
2. Column C "Cost To Date" includes actuals (amount paid) and accruals (amount of work performed) to date.
3. Cost To Date for "Electrification" include 5% for Contractor's retention until authorization of retention release.
4. The agency labor is currently accrued since end of October 2016. Expenditures for agency labor will be updated once the financial data is available

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**Table 8-2 EMU Budget & Expenditure Status**

Description of Work	Budget (A)	Cost This Month (B) <sup>1</sup>	Cost To Date (C) <sup>2</sup>	Estimate To Complete (D)	Estimate At Completion (E) = (C) + (D)
EMU	\$ 550,899,459	\$ -	\$ 1,242,300	\$ 549,657,159	\$ 550,899,459
CEMOF Modifications	\$ 1,344,000	\$ -	\$ -	\$ 1,344,000	\$ 1,344,000
Management Oversight <sup>3</sup>	\$ 64,139,103	\$ 668,857	\$ 17,321,705	\$ 46,817,399	\$ 64,139,103
Executive Management	\$ 5,022,302	\$ 41,559	\$ 1,571,348	\$ 3,450,954	\$ 5,022,302
Community Relations	\$ 1,685,614	\$ 37,212	\$ 292,210	\$ 1,393,404	\$ 1,685,614
Safety & Security	\$ 556,067	\$ 9,647	\$ 155,869	\$ 400,199	\$ 556,067
Project Management Services	\$ 13,275,280	\$ 72,541	\$ 4,791,549	\$ 8,483,732	\$ 13,275,280
Engineering & Construction	\$ 89,113	\$ -	\$ 23,817	\$ 65,296	\$ 89,113
EMU Engineering & Management	\$ 32,082,556	\$ 200,452	\$ 7,516,865	\$ 24,565,692	\$ 32,082,556
IT Support	\$ 1,027,272	\$ 8,640	\$ 225,281	\$ 801,991	\$ 1,027,272
Operations Support	\$ 1,878,589	\$ 11,464	\$ 295,812	\$ 1,582,777	\$ 1,878,589
General Support	\$ 2,599,547	\$ 18,890	\$ 627,304	\$ 1,972,243	\$ 2,599,547
Budget / Grants / Finance	\$ 712,123	\$ 24,708	\$ 125,408	\$ 586,716	\$ 712,123
Legal	\$ 1,207,500	\$ 208,211	\$ 689,396	\$ 518,104	\$ 1,207,500
Other Direct Costs	\$ 4,003,139	\$ 35,533	\$ 1,006,848	\$ 2,996,291	\$ 4,003,139
TASI Support	\$ 2,740,000	\$ -	\$ -	\$ 2,740,000	\$ 2,740,000
Required Projects	\$ 4,500,000	\$ -	\$ -	\$ 4,500,000	\$ 4,500,000
Finance Charges	\$ 1,941,800	\$ 59,593	\$ 59,593	\$ 1,882,207	\$ 1,941,800
Contingency	\$ 38,562,962	\$ -	\$ -	\$ 38,562,962	\$ 38,562,962
Owner's Reserve	\$ -	\$ -	\$ -	\$ -	\$ -
<b>EMU SUBTOTAL<sup>3</sup></b>	<b>\$ 664,127,325</b>	<b>\$ 728,450</b>	<b>\$ 18,623,598</b>	<b>\$ 645,503,727</b>	<b>\$ 664,127,325</b>

Notes regarding tables above:

- Column B "Cost This Month" represents the cost of work performed this month.
- Column C "Cost To Date" includes actuals (amount paid) and accruals (amount of work performed) to date.
- The agency labor is currently accrued since the end of October 2016. Expenditures for agency labor will be updated once the financial data is available.

**Table 8-3 PCEP Budget & Expenditure Status**

Description of Work	Budget (A)	Cost This Month (B) <sup>1</sup>	Cost To Date (C) <sup>2</sup>	Estimate To Complete (D)	Estimate At Completion (E) = (C) + (D)
Electrification Subtotal	\$ 1,316,125,208	\$ 10,553,561	\$ 139,305,584	\$ 1,176,819,624	\$ 1,316,125,208
EMU Subtotal	\$ 664,127,325	\$ 728,450	\$ 18,623,598	\$ 645,503,727	\$ 664,127,325
<b>PCEP TOTAL</b>	<b>\$ 1,980,252,533</b>	<b>\$ 11,282,011</b>	<b>\$ 157,929,181</b>	<b>\$ 1,822,323,351</b>	<b>\$ 1,980,252,533</b>

Notes regarding tables above:

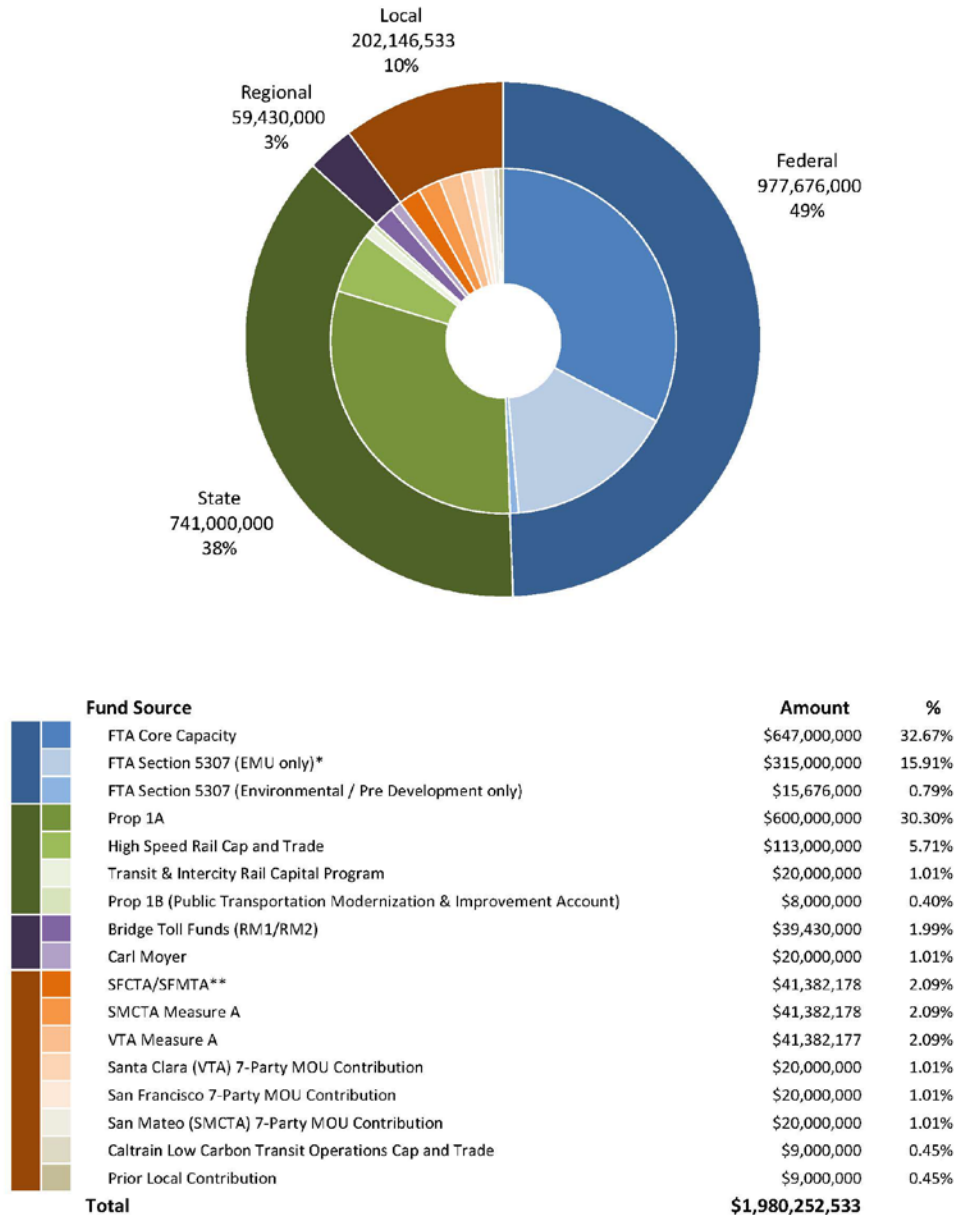
- Column B "Cost This Month" represents the cost of work performed this month.
- Column C "Cost To Date" includes actuals (amount paid) and accruals (amount of work performed) to date.



**9.0 FUNDING**

Figure 9-1 depicts a summary of the funding plan for the PCEP. It provides a breakdown of the funding partners as well as the allocated funds. As previously reported, all non-core capacity funds have been committed to the PCEP project. In January, the FTA finalized the FFGA for \$647 million in Core Capacity funding, which was submitted for the mandatory 30-day Congressional review period.

**Figure 9-1 Funding Plan**



Notes:  
 \*Includes necessary fund transfer with SMCTA  
 \*\*Includes \$4M CMAQ Transfer considered part of SF local contribution

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## **10.0 RISK MANAGEMENT**

The risk management process is conducted in an iterative fashion throughout the life of the project. During this process, new risks are identified, other risks are resolved or managed, and potential impacts and severity modified based on the current situation. The Risk Management team's progress report includes a summary on the effectiveness of the Risk Management Plan, any unanticipated effects, and any correction needed to handle the risk appropriately.

The Risk Management team has identified the following items as Top Risks for the project:

- If overhead utilities are not relocated in time, BBI may incur delays.
- A delay in the execution of the FFGA by the FTA, could potentially result in delays to the project.
- Upgrades to the electrical service needed for the Electrification project are dependent upon final agreement with PG&E, for which technical and contractual issues must first be resolved.
- The final configuration of the electrification system requires the installation of a duct bank under Union Pacific Railroad (UPRR) tracks. This will require further coordination with UPRR.
- Transit America Services Inc. (TASI) may not be able to deliver sufficient staff resources to support the construction and testing of the electrification system.
- Recruitment of Key Staff is necessary to support the project.
- As built Communications Based Overlay Signal System (CBOSS) drawings needed by BBI may not be completed as originally scheduled.

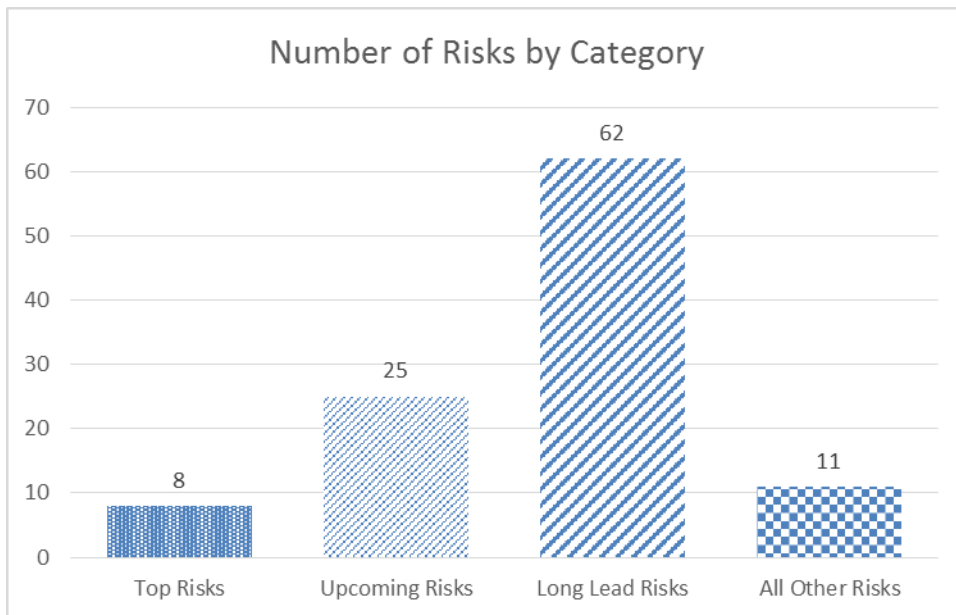
### **Activity This Month**

- Updates were made to risk descriptions, effects, and mitigations based upon weekly input from risk owners. Monthly cycle of risk updating was completed based on schedules established in the Risk Identification and Mitigation Plan.
- Risk retirement dates were updated based upon revisions to the project schedule and input from risk owners.
- Continued weekly monitoring of risk mitigation actions and publishing of the risk register.
- The PCEP Risk Management Team attended Electrification, Project Delivery, and Systems Integration meetings to monitor developments associated with risks and to identify new risks.

- The Risk Assessment Committee convened to review risks proposed for retirement and major changes to grading of risks. Two risks were retired. A potential new risk was referred for further development, mitigation, and grading. Continued discussion of reputational risk as a potential adjunct to current risk management efforts.

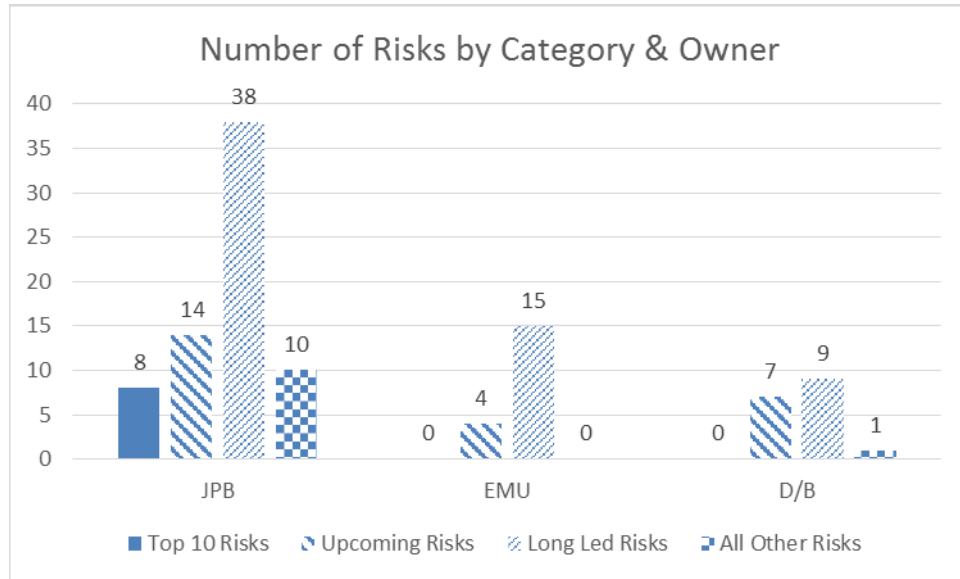
Tables 10-1 and 10-2 show the risks identified for the program. Risks are categorized as: top risk, upcoming risk, long lead, and all other risks. The categories are based on a rating scale comprised of schedule and cost factors. Simply put, top risks are considered to have a significantly higher than average risk grade. Upcoming risks are risks for which mitigating action must be taken within 60 days. Long lead risks are risks for which mitigating action must be taken as much as a year or more into the future. All other risks are risks not falling into other categories.

**Table 10-1 Monthly Status of Risks**



**Total Number of Active Risks = 106**

**Table 10-2 Risk Classification**



**Total Number of Active Risks = 106**

**Activity Next Month**

- Update risk descriptions, effects, mitigations and retirement dates.
- Conduct weekly monitoring of risk mitigation actions and continue publishing risk register.
- Further develop reputational risk analysis and submit recommendation.

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## **11.0 ENVIRONMENTAL**

### **11.1 Permits**

The PCEP requires environmental permits from the following agencies/federal regulations: Section 106 of the National Historic Preservation Act of 1966 (NHPA), Section 7 of the Endangered Species Act (ESA), United States Army Corps of Engineers (USACE), San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), the California Department of Fish and Wildlife (CDFW), and the San Francisco Bay Conservation Development Commission (SFBCDC).

Section 106 of the NHPA process as well as Section 7 of the ESA process have concluded.

#### **Activity This Month**

- All environmental permits have been obtained.

#### **Activity Next Month**

- There are no planned permit activities in the next month.

### **11.2 Mitigation Monitoring and Reporting Program**

The California Environmental Quality Act (CEQA) requires that a Lead Agency establish a program to monitor and report on mitigation measures that it has adopted as part of the environmental review process. The PCEP team has prepared a Mitigation, Monitoring, and Reporting Program (MMRP) to ensure that mitigation measures identified in the PCEP EIR are fully implemented during project implementation. PCEP will implement the mitigation measures through its own actions, those of the DB contractor and actions taken in cooperation with other agencies and entities. The MMRP is available on the Caltrain website:

<http://www.caltrain.com/Assets/Caltrain+Modernization+Program/Electrification+Documents/MMRP.pdf>

*(Note: For viewers accessing the link above electronically, please cut and paste the link into a browser if it does not direct you immediately to the document.)*

#### **Activity This Month**

- Biological, archaeological, and Native American monitors continued to be present during design phase investigation activities (geotechnical and potholing activities) occurring in areas that require environmental compliance monitoring. The monitoring was conducted in accordance with measures in the MMRP in an effort to minimize potential impact on sensitive environmental resources.

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- Protocol-level surveys for a sensitive avian species were initiated at previously identified potential habitat locations and inspections of over-passes and bridges were initiated in order to determine the potential for nesting swallows.
- An architectural historian continued to take photos and document site conditions at a number of historic railroad stations in support of historic documentation required as part of the MMRP.

**Activity Next Month**

- Biological, archaeological, and Native American monitors will continue to monitor design phase investigation activities (geotechnical and potholing activities) occurring in areas that require environmental compliance monitoring. Biological surveyors will initiate surveys for nesting birds ahead of design phase investigation activities occurring during the nesting bird season (February 1st through August 31st) and will continue to conduct protocol level surveys for sensitive avian species.



## **12.0 UTILITY RELOCATION**

Implementation of the PCEP requires relocation or rerouting of both public and private utility lines and/or facilities. Utility relocation will require coordination with many entities, including regulatory agencies; public safety agencies; Federal, State, and local government agencies; private and public utilities; and other transportation agencies and companies. This section describes the progress specific to the utility relocation process.

### **Activity This Month**

- PCEP team continued monthly coordination meetings with telecommunication and power utilities. These meetings focused on overall project and relocation schedules, designation of responsibilities, applicable design standards, and reconciliation of agreements and records.
- Work continued with all utilities on review of overhead utility line relocations based on the current preliminary design. This effort is expected to continue for the next several months to support identification and confirmation, agreements, and design of all relocations.
- PCEP team sent relocation notices and requested design information to PG&E as a part of the relocation process.
- PCEP team continued to work with Verizon on the relocation of fiber optics cable within the Caltrain ROW.

### **Activity Next Month**

- Monthly meetings will continue with telecom and power carriers.
- PCEP team will continue to send relocation notices to utility owners and will also continue to provide design information for relocation designs.
- PCEP team will continue to work with utility owners to update the relocation schedule.

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## **13.0 REAL ESTATE**

The PCEP requires the acquisition of a limited amount of real estate. In general, Caltrain uses existing right-of-ways (ROW) for the PCEP, but in certain locations, will need to acquire small portions of additional real estate to expand the ROW to accommodate installation of OCS supports (fee acquisitions or railroad easements ) and associated Electrical Safety Zones (easements). There are two larger full acquisition areas required for wayside facilities (i.e., traction power stations, switching stations and paralleling stations). The PCEP real estate team (RE team) manages the acquisition of all property rights. Caltrain does not need to acquire real estate to complete the EMU procurement portion of the PCEP.

### **Activity This Month**

Table 13-1 below provides a brief summary of the Real Estate acquisition overview for the project.

- The RE team continues negotiations on offers pending, including working through relocation of two commercial businesses.
- The first parcel in Segment 2 closed escrow.
- Four other property owners in Segment 2 signed and accepted offers presented to them.
- The agency continues to negotiate the Cooperative Agreement for eminent domain authority with the City & County of San Francisco. The target for completion is early 2017.
- The PCEP team with UPRR developed a process for acquiring the two parcels necessary for the Project.
- Three appraisals were updated.

### **Activity Next Month**

- Negotiations for all outstanding offers will continue.
- The PCEP team issued work directives to appraise and acquire parcels in Segments 1 and 3 and appraisals commenced.
- It is anticipated that properties will close escrow for grantors who have accepted the offers.

**Table 13-1 Real Estate Acquisition Overview**

Segment	No. of Parcels Needed	No. of Appraisals Completed	Offers Presented	Offers Accepted	Acquisition Status		
					Escrow Closed	Value Litigation	Parcel Possession
<b>Segment 1</b>	8	0	0	0	0	0	0
<b>Segment 2</b>	27	24	21	5	1	0	0
<b>Segment 3</b>	11	0	0	0	0	0	0
<b>Segment 4</b>	10	10	9	0	0	0	0
<b>Total</b>	<b>56</b>	<b>34</b>	<b>30</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>0</b>

Note:  
 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.

**14.0 THIRD PARTY AGREEMENTS**

Third-party coordination is necessary for work impacting public infrastructure, utilities, ROW acquisitions, and others. The table below outlines the status of necessary agreements for the PCEP.

**Table 14-1 Third-Party Agreement Status**

Type	Agreement	Third-Party	Status
Governmental Jurisdictions	Construction & Maintenance <sup>1</sup>	City and County of San Francisco	In Process
		City of Brisbane	Executed
		City of South San Francisco	Executed
		City of San Bruno	Executed
		City of Millbrae	Executed
		City of Burlingame	Executed
		City of San Mateo	Executed
		City of Belmont	Executed
		City of San Carlos	Executed
		City of Redwood City	Executed
		City of Atherton	In Process
		County of San Mateo	Executed
		City of Menlo Park	Executed
		City of Palo Alto	In Process
		City of Mountain View	Executed
		City of Sunnyvale	Executed
		City of Santa Clara	Executed
	County of Santa Clara	Executed	
	City of San Jose	Executed	
	Condemnation Authority	San Francisco	In Process
San Mateo		Executed	
Santa Clara		Executed	
Utilities	Infrastructure	Pacific Gas & Electric (PG&E)	Executed <sup>3</sup>
	Operating Rules	California Public Utilities Commission (CPUC)	Executed <sup>2</sup>
Transportation & Railroad	Construction & Maintenance	Bay Area Rapid Transit (BART)	Executed <sup>4</sup>
	Construction & Maintenance	California Dept. of Transportation (Caltrans)	Not needed <sup>5</sup>
	Trackage Rights	Union Pacific Railroad (UPRR)	Executed <sup>4</sup>

Notes regarding table above:

1. Agreements memorialize the parties' consultation and cooperation, designate respective rights and obligations and ensure cooperation between the JPB and the cities and counties in connection with the design and construction of the PCEP. A comprehensive agreement is planned for each of the 17 cities and three counties along the Caltrain ROW and within the PCEP limits.
2. Approved by City Council, or Board of Supervisors, and awaiting signature for execution.
3. The Master agreement and supplemental agreements 1, 2 and 5 have been executed. Supplemental agreements 3 and 4 are to be negotiated and executed.
4. Utilizing existing agreements.
5. Caltrans Peer Process utilized. Formal agreement not needed.

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## **15.0 GOVERNMENT AND COMMUNITY AFFAIRS**

The Community Relations and Outreach team coordinates all issues with all jurisdictions, partner agencies, government organizations, businesses, labor organizations, local agencies, residents, community members, other interested parties, and the media. In addition, the team oversees the design-build contractor's effectiveness in implementing its Public Involvement Program. The following PCEP related external affairs meetings took place in November:

- **Presentations/Meetings**

- Caltrain Accessibility Advisory Committee
- City/County Staff Coordinating Group
- JPB Citizen Advisory Committee
- JPB Bicycle Advisory Committee
- SFCTA Citizen Advisory Committee
- Local Policy Maker Group
- SMCTA Citizen Advisory Committee

- **Third Party/Stakeholder Actions**

- Unanimous support by San Mateo County Transportation Authority Board of Directors committing to fund up to \$135 million for potential cost over-runs or funding shortfalls, if they arise for the PCEP. If a cost over-run occurs, members of the 9-party and 7-party MOUs would collectively decide how to address the cost over-run so one funding partner was not overly burdened.
- Unanimous support by San Francisco County Transportation Authority committing to fund up to \$50 million for potential cost over-runs or funding shortfalls, if they arise for the PCEP. If a cost over-run occurs, members of the 9-party and 7-party MOUs would collectively decide how to address the cost over-run so one funding partner was not overly burdened.
- Unanimous support by Metropolitan Transportation Commission committing to fund up to \$50 million for potential cost over-runs or funding shortfalls, if they arise for the PCEP. If a cost over-run occurs, members of the 9-party and 7-party MOUs would collectively decide how to address the cost over-run so one funding partner was not overly burdened.
- Unanimous support by Santa Clara Valley Transportation Authority committing to fund up to \$65 million for potential cost over-runs or funding shortfalls, if they arise for the PCEP. If a cost over-run occurs, members of the 9-party and 7-party MOUs would collectively decide how to address the cost over-run so one funding partner was not overly burdened.

- **Stakeholder Meetings**

- San Mateo County Economic Development Association (SAMCEDA)
- Caltrain Commuter Coalition

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**16.0 DBE PARTICIPATION AND LABOR STATISTICS**

Disadvantaged Business Enterprise (DBE) and labor statistics will be reported after construction has commenced.

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## **17.0 PROCUREMENT**

### **Contract Activity**

- Issued Amendment No. 3 to exercise the first 2-year option terms for the CalMod Program Management Support Services contract for URS (AECOM).
- Issued Amendment No. 2 to exercise both option year terms for the CalMod Systems Safety Specialist Support Services contract for B&G Transportation Group.

### **Invitation for Bid (IFB)/Request for Qualifications (RFQ)/ Request for Proposals (RFP) Advertised this Month:**

- No IFB/RFQ/RFP's were issued for January.

### **IFB/RFQ/RFP Received this Month:**

- No IFB/RFQ/RFP's were received for January.

### **Contract Awards this Month:**

- No Contract Awards were made for January.

### **Work Directive (WD)/Purchase Order (PO) Awards & Amendments this Month:**

- Multiple WD & PO's were issued to support the program needs for January.

### **Upcoming Invitation for Bid (IFB)/Request for Qualifications (RFQ)/ Request for Proposals (RFP):**

- RFP - SCADA system to support CalMod. (Issue in February)
- RFP - On- Call Ambassador Support Services. (Issue in February)

### **Upcoming Contract Awards:**

- No upcoming contract awards.

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## **18.0 TIMELINE OF MAJOR PROJECT ACCOMPLISHMENTS**

Below is a timeline showing major project accomplishments from 2002 to 2017:

<b>Date</b>	<b>Milestone</b>
2002	Conceptual Design Completed
2004	Draft NEPA Environmental Assessment (EA)/Environmental Impact Report (EIR) (2004)
2008	35% design complete
2009	Final NEPA EA/EIR and Finding of No Significant Impact (FONSI)
2014	Request for Qualifications (RFQ) for Electrification Request for Information for EMU
2015	JPB Approves Final CEQA Environmental Impact Report (EIR) JPB Approves Issuance of RFP for Electrification JPB Approves Issuance of RFP for EMU Receipt of Electrification of Proposal for Electrification FTA approval of Core Capacity Project Development
2016	JPB Approves EIR Addendum #1: PS-7 FTA Re-Evaluation of 2009 FONSI Receipt of Electrification BAFOs Receipt of EMU Proposal Application for Entry to Engineering to FTA  Completed the EMU Buy America Pre-Award Audit and Certification Negotiations completed with Stadler for EMU Vehicles Negotiations completed with BBI., the apparent best value Electrification firm  JPB Approves Contract Award (LNTP) BBI JPB Approves Contract Award (LNTP) Stadler FTA approval of Entry into Engineering for the Core Capacity Program
2017	FTA finalized the FFGA for \$647 million in Core Capacity funding

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**APPENDICES**

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Appendix A – Acronyms

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<b>AIM</b>	<b>Advanced Information Management</b>	<b>DBE</b>	<b>Disadvantaged Business Enterprise</b>
<b>ARINC</b>	<b>Aeronautical Radio, Inc.</b>	<b>DEMP</b>	<b>Design, Engineering, and Management Planning</b>
<b>BAAQMD</b>	<b>Bay Area Air Quality Management District</b>	<b>EA</b>	<b>Environmental Assessment</b>
<b>BBI</b>	<b>Balfour Beatty Infrastructure, Inc.</b>	<b>EAC</b>	<b>Estimate at Completion</b>
<b>CAISO</b>	<b>California Independent System Operator</b>	<b>EIR</b>	<b>Environmental Impact Report</b>
<b>CalMod</b>	<b>Caltrain Modernization Program</b>	<b>EMU</b>	<b>Electric Multiple Unit</b>
<b>Caltrans</b>	<b>California Department of Transportation</b>	<b>ESA</b>	<b>Endangered Species Act</b>
<b>Caltrans</b>	<b>California Department of Transportation</b>	<b>ESA</b>	<b>Environmental Site Assessments</b>
<b>CBOSS</b>	<b>Communication Based OverlaySignal System</b>	<b>FEIR</b>	<b>Final Environmental Impact Report</b>
<b>CDFW</b>	<b>California Department of Fish and Wildlife</b>	<b>FFGA</b>	<b>Full Funding Grant Agreement</b>
<b>CDR</b>	<b>Conceptual Design Review</b>	<b>FLSSC</b>	<b>Fire/Life Safety &amp; Security Committee</b>
<b>CDRL</b>	<b>Contract Deliverables Request List</b>	<b>FONSI</b>	<b>Finding of No Significant Impact</b>
<b>CEMOF</b>	<b>Centralized Equipment Maintenance and Operations Facility</b>	<b>FRA</b>	<b>Federal Railroad Administration</b>
<b>CEQA</b>	<b>California Environmental Quality Act (State)</b>	<b>FTA</b>	<b>Federal Transit Administration</b>
<b>CHSRA</b>	<b>California High-Speed Rail Authority</b>	<b>GO</b>	<b>General Order</b>
<b>CIP</b>	<b>Capital Improvement Plan</b>	<b>HSR</b>	<b>High Speed Rail</b>
<b>CPT</b>	<b>Cone Penetrometer Test</b>	<b>ICD</b>	<b>Interface Control Document</b>
<b>CPUC</b>	<b>California Public Utilities Commission</b>	<b>IFB</b>	<b>Invitation for Bid</b>
<b>DB</b>	<b>Design-Build</b>	<b>ITS</b>	<b>Intelligent Transportation System</b>
<b>DBB</b>	<b>Design-Bid-Build</b>	<b>JPB</b>	<b>Peninsula Corridor Joint Powers Board</b>

<b>LNTP</b>	<b>Limited Notice to Proceed</b>	<b>RAMP</b>	<b>Real Estate Acquisition Management Plan</b>
<b>MMRP</b>	<b>Mitigation, Monitoring, and Reporting Program</b>	<b>RE</b>	<b>Real Estate</b>
<b>MOU</b>	<b>Memorandum of Understanding</b>	<b>RFI</b>	<b>Request for Information</b>
<b>MPS</b>	<b>Master Program Schedule</b>	<b>RFP</b>	<b>Request for Proposals</b>
<b>NCR</b>	<b>Non Conformance Report</b>	<b>RFQ</b>	<b>Request for Qualifications</b>
<b>NEPA</b>	<b>National Environmental Policy Act (Federal)</b>	<b>ROCS</b>	<b>Rail Operations Center System</b>
<b>NHPA</b>	<b>National Historic Preservation Act</b>	<b>ROW</b>	<b>Right-of-Way</b>
<b>NMFS</b>	<b>National Marine Fisheries Service</b>	<b>RRP</b>	<b>Railroad Protective Liability</b>
<b>NTP</b>	<b>Notice to Proceed</b>	<b>RSD</b>	<b>Revenue Service Date</b>
<b>OCS</b>	<b>Overhead Contact System</b>	<b>RWP</b>	<b>Roadway Worker Protection</b>
<b>PCEP</b>	<b>Peninsula Corridor Electrification Project</b>	<b>SAMCEDA</b>	<b>San Mateo County Economic Development Association</b>
<b>PCJPB</b>	<b>Peninsula Corridor Joint Powers Board</b>	<b>SamTrans</b>	<b>San Mateo County Transit District</b>
<b>PG&amp;E</b>	<b>Pacific Gas and Electric</b>	<b>SCADA</b>	<b>Supervisory Control and Data Acquisition</b>
<b>PHA</b>	<b>Preliminary Hazard Analysis</b>	<b>SCC</b>	<b>Standard Cost Code</b>
<b>PMOC</b>	<b>Project Management Oversight Contractor</b>	<b>SPUR</b>	<b>San Francisco Bay Area Planning and Urban Research Association</b>
<b>PO</b>	<b>Purchase Order</b>	<b>SFBCDC</b>	<b>San Francisco Bay Conservation Development Commission</b>
<b>PS</b>	<b>Paralleling Station</b>	<b>SFCTA</b>	<b>San Francisco County Transportation Authority</b>
<b>PTC</b>	<b>Positive Train Control</b>	<b>SFMTA</b>	<b>San Francisco Municipal Transportation Agency</b>
<b>QA</b>	<b>Quality Assurance</b>	<b>SFRWQCB</b>	<b>San Francisco Regional Water Quality Control Board</b>
<b>QC</b>	<b>Quality Control</b>		
<b>QMP</b>	<b>Quality Management Plan</b>		
<b>QMS</b>	<b>Quality Management System</b>		

<b>SOGR</b>	<b>State of Good Repair</b>
<b>SS</b>	<b>Switching Station</b>
<b>SSCP</b>	<b>Safety and Security Certification Plan</b>
<b>SSCRC</b>	<b>Safety &amp; Security Certification Review Committee</b>
<b>SSMP</b>	<b>Safety and Security Management Plan</b>
<b>SSWP</b>	<b>Site Specific Work Plan</b>
<b>TASI</b>	<b>Transit America Services Inc.</b>
<b>TBD</b>	<b>To Be Determined</b>
<b>TPS</b>	<b>Traction Power Substation</b>
<b>TVA</b>	<b>Threat and Vulnerability Assessment</b>
<b>UPRR</b>	<b>Union Pacific Railroad</b>
<b>USACE</b>	<b>United States Army Corp of Engineers</b>
<b>USFWS</b>	<b>U.S. Fish and Wildlife Service</b>
<b>VTA</b>	<b>Santa Clara Valley Transportation Authority</b>
<b>WD</b>	<b>Work Directive</b>

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Appendix B – Schedule

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#	Activity Name	Duration	Start	Finish	2014		2015				2016				2017				2018				2019				2020				2021				2022	
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2		
1	<b>MASTER CPM SCHEDULE C15.06</b>	2001d	05/01/14 A	12/30/21																																
2	<b>MILESTONES</b>	2001d	05/01/14 A	12/30/21	◆				◆		◆											◆		◆			◆								◆	
3	<b>PLANNING / APPROVALS PHASE</b>	929d	05/01/14 A	11/22/17																																
4	<b>ENVIRONMENTAL</b>	466d	05/01/14 A	02/11/16 A																																
5	<b>DESIGN/BUILDER PROCUREMENT</b>	596d	05/01/14 A	09/02/16 A																																
6	<b>AGENCY COORDINATION / APPROVALS</b>	635d	10/01/14 A	03/31/17																																
7	<i>FEDERAL TRANSIT ADMINISTRATION</i>	466d	04/16/15 A	02/15/17																																
8	<i>JURISDICTIONAL AGREEMENTS</i>	635d	10/01/14 A	03/31/17																																
9	<i>CALIFORNIA PUBLIC UTILITIES COMMISSION</i>	515d	11/03/14 A	11/10/16 A																																
10	<i>PACIFIC GAS &amp; ELECTRIC</i>	612d	11/03/14 A	03/31/17																																
11	<i>CALIFORNIA DEPARTMENT OF TRANSPORTATION</i>	322d	02/02/15 A	05/05/16 A																																
12	<i>BAY AREA RAPID TRANSIT DISTRICT</i>	221d	06/18/15 A	04/29/16 A																																
13	<i>SANTA CLARA VALLEY TRANSPORTATION AUTHORITY</i>	242d	06/18/15 A	05/31/16 A																																
14	<i>LABOR AGREEMENT</i>	128d	01/02/15 A	07/02/15 A																																
15	<i>UTILITIES</i>	486d	04/01/15 A	02/28/17																																
16	<b>PERMITS</b>	468d	12/01/14 A	09/30/16 A																																
17	<b>RIGHT-OF-WAY</b>	732d	02/02/15 A	11/22/17																																
18	<b>SCADA</b>	526d	03/30/15 A	04/21/17																																
19	<b>DESIGN / ENGINEERING PHASE</b>	960d	10/01/14 A	07/12/18																																
20	<b>PG&amp;E INFRASTRUCTURE</b>	368d	02/01/17	07/12/18																																
21	<b>TUNNEL MODIFICATION</b>	802d	10/31/14 A	12/29/17																																
22	<b>CEMOF</b>	804d	10/01/14 A	11/30/17																																
23	<b>VEHICLES PHASE</b>	1902d	05/01/14 A	08/13/21																																
24	<b>SPECIFICATION</b>	134d	07/01/14 A	01/12/15 A																																
25	<b>PROCUREMENT</b>	613d	05/01/14 A	09/06/16 A																																
26	<b>DETAILED DESIGN (STADLER)</b>	364d	09/06/16 A	02/12/18																																
27	<b>PROCUREMENT (MATERIAL &amp; EQUIPMENT) (STADLER)</b>	416d	01/09/17	08/24/18																																
28	<b>MOCK-UPS (STADLER)</b>	202d	12/15/16 A	09/29/17																																
29	<b>ELECTRIC LOCO</b>	854d	02/01/17	06/10/20																																
30	<b>MANUFACTURING, TESTING, &amp; TAKE OVER (STADLER)</b>	953d	11/13/17	08/13/21																																
31	<b>CONSTRUCTION / INSTALLATION PHASE</b>	853d	04/21/17	08/31/20																																
32	<b>PG&amp;E INFRASTRUCTURE</b>	699d	12/01/17	08/31/20																																
33	<b>TUNNEL MODIFICATION</b>	356d	01/02/18	05/24/19																																
34	<b>SCADA</b>	764d	04/21/17	04/24/20																																
35	<b>CEMOF</b>	109d	12/01/17	05/04/18																																
36	<b>TESTING / STARTUP PHASE</b>	426d	04/27/20	12/30/21																																
37	<b>PRE-REVENUE OPERATIONS</b>	236d	09/10/20	08/13/21																																
38	<b>REVENUE OPERATIONS</b>	172d	12/11/20	08/16/21																																
39	<b>RISK CONTINGENCY</b>	426d	04/27/20	12/30/21																																
40	<b>OPERATIONAL READINESS PHASE</b>	791d	06/28/17	08/07/20																																

				Page 1 of 2 Filename: _C15.06 012317...	<table border="1" style="font-size: small;"> <tr> <th>Date</th> <th>Revision</th> <th>Checked</th> <th>Approved</th> </tr> <tr> <td>01/23/2017</td> <td>Updates &amp; Revisions Completed By A. Christofas &amp; S. Iyer</td> <td></td> <td></td> </tr> <tr> <td>01/23/2017</td> <td>Checked By S. Iyer &amp; A. Christofas</td> <td>x</td> <td></td> </tr> <tr> <td>01/26/2017</td> <td>Approved By R. Viswanathan</td> <td></td> <td>x</td> </tr> </table>	Date	Revision	Checked	Approved	01/23/2017	Updates & Revisions Completed By A. Christofas & S. Iyer			01/23/2017	Checked By S. Iyer & A. Christofas	x		01/26/2017	Approved By R. Viswanathan		x
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