



**Modernization Program
Peninsula Corridor Electrification Project (PCEP)**



April 2017 Monthly Progress Report

April 30, 2017

Funding Partners



Federal Transit Administration (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



Proposition 1A
California High Speed Rail Authority (CHSRA) Cap and Trade



Carl Moyer Fund



Bridge Tolls (Funds Regional Measure (RM) 1/RM2)



San Francisco County Transportation Authority (SFCTA)/San Francisco Municipal Transportation Agency (SFMTA)



San Mateo County Transportation Authority (SMCTA) Contribution
SMCTA Measure A



Santa Clara Valley Transportation Authority (VTA) Measure A
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 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:

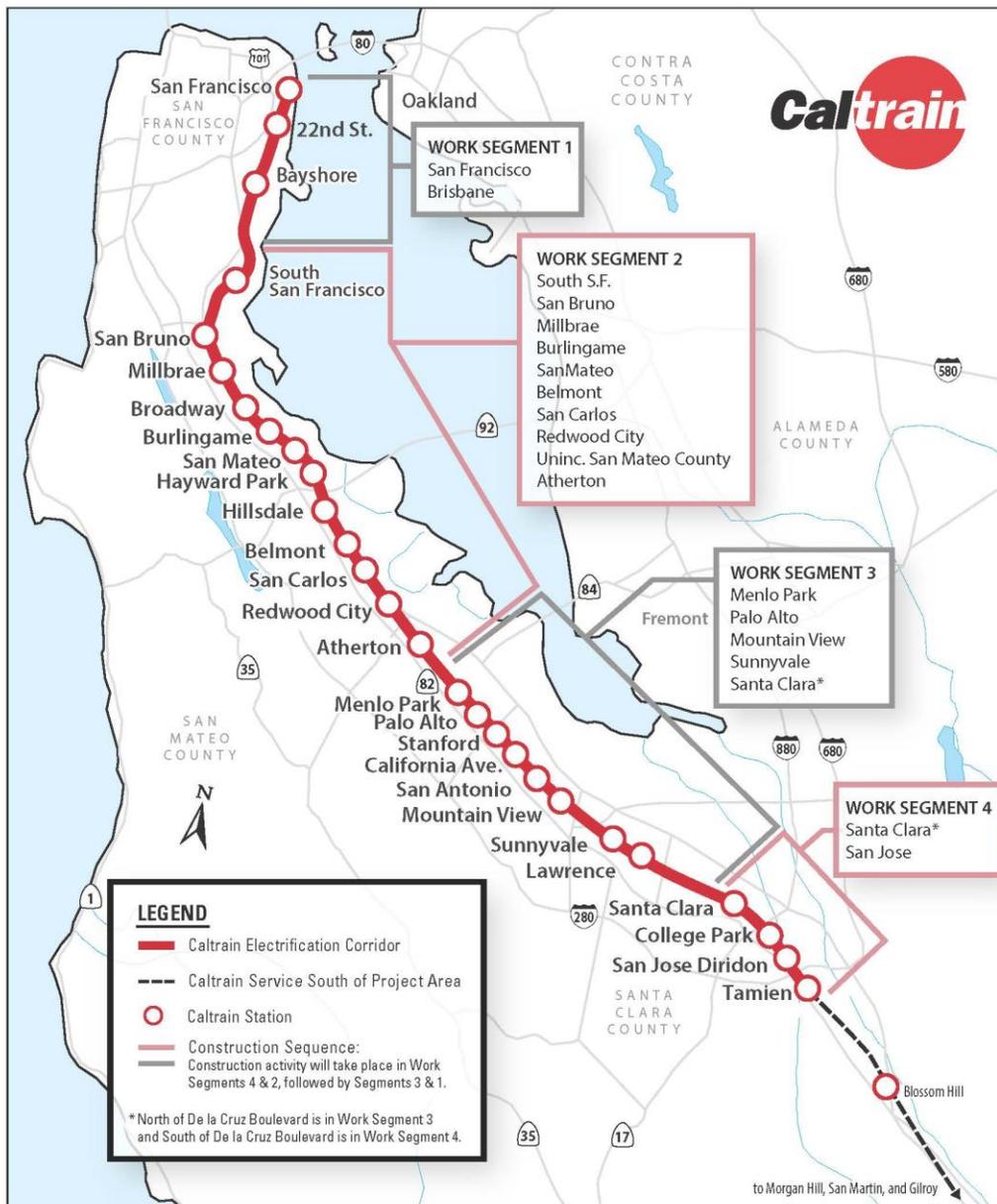
- **Improved Train Performance, Increased Ridership Capacity and Increased Service:** Electrified trains can accelerate and decelerate more quickly than diesel-powered trains, allowing Caltrain to run more efficiently. In addition, because of their performance advantages, electrified trains will enable 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

Monthly Progress Report

The Federal Transit Administration (FTA) and Peninsula Corridor Joint Powers Board (JPB) completed all administrative and statutory requirements for the Full Funding Grant Agreement (FFGA) of \$647 million in Core Capacity. On February 17, the JPB was informed by the FTA that a decision was made to defer execution of the pending \$647 million FFGA for the PCEP until the Administration developed the President's Fiscal Year (FY) 2018 Budget (anticipated in mid-June). In light of this news, the existing Limited Notice to Proceed (LNTP) with Balfour Beatty Infrastructure, Inc. (BBII) for the Electrification Project and Stadler for the EMU vehicles was extended to June 30, 2017. Staff continues to work aggressively with lobbyists and the numerous national, state and regional supporters to obtain FFGA approval.

FTA quarterly meeting was held on April 13 and included a presentation of the project status.

The PCEP team continues work with BBII on 65% design and field investigations. The PCEP team completed review of the 65% overhead contact system (OCS) layout design for Segment 2 Work Areas 5 and 4 for the next iteration of design submittals. The PCEP team provided current as-built signal drawings for all work segments to BBII for advancement of 65% design. BBII continued potholing in segments 2 and 4 and continued preparation of test results from geotechnical borings.

Stadler continued to progress numerous management submittals, including the Master Program Schedule (MPS), an updated Contract Deliverables Requirement List (CDRL), and updated System Safety and Quality Assurance Plan. The PCEP team is currently reviewing these submittals and working with Stadler to finalize these deliverables. Caltrain internal stakeholders visited KISS bi-level EMU trainset operators SBB and BLS and numerous maintenance and operations centers. The cab and console mockup review was conducted at Stadler's facility. The PCEP team continues to address system-wide interface issues involving the emerging EMU design and the existing wayside infrastructure, the Electrification Project, and the Communications-Based Overlay Signal System (CBOSS) Project.

2.1 Schedule

The Revenue Service Date (RSD) in the 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. The overall schedule will be updated upon the execution of FFGA.

Table 2-1 Schedule Status

Milestones ^{1,2}	Program Plan	January	February
Receipt of FFGA	12/15/2016	02/15/2016	mid-June
Full Notice to Proceed (FNTP) to Electrification DB Contractor	N/A	03/01/2017	TBD
FNTP to EMU Manufacturer	N/A	03/01/2017	TBD
Start of Electrification Major Construction	03/20/2017	07/24/2017	07/24/2017
First Eight Miles of Electrification Complete to Begin Testing	04/08/2019	10/08/2019	10/08/2019
Delivery of First 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:

- ¹ 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 DB and EMU contractors, changes to milestones will be thoroughly vetted prior to reflecting those changes in the Monthly Report.
- ² Program Plan only considered a Notice to Proceed (NTP). It did not account for an LNTP and FNTP.

2.2 Budget

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

Table 2-2 Budget and Expenditure Status

Description of Work	Budget (A)	Cost This Month (B) ¹	Cost To Date (C) ²	Estimate To Complete (D)	Estimate At Completion (E) = (C) + (D)
Electrification Subtotal	\$ 1,316,125,208	\$ 12,032,707	\$ 174,942,948	\$ 1,141,182,260	\$ 1,316,125,208
EMU Subtotal	\$ 664,127,325	\$ 688,082	\$ 33,491,387	\$ 630,635,938	\$ 664,127,325
PCEP TOTAL	\$ 1,980,252,533	\$ 12,720,789	\$ 208,434,335	\$ 1,771,818,198	\$ 1,980,252,533

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.

2.3 Board Actions

There were no actions related to the PCEP at the April 4 JPB board meeting.

Future anticipated board actions include:

- June
 - JPB Capital Budget adoption [Finance]
- July
 - PCEP budget adoption [Finance]*
 - City and County of San Francisco Cooperative Agreement (eminent domain) approval [Real Estate]
 - *City and County of San Francisco Cooperative Agreement (eminent domain) approval by City and County of San Francisco*
 - Real estate closed session – Segments 1 and 3 acquisitions [Real Estate]*
 - *Resolution of Necessity – Segment 2 parcels by SamTrans**
 - *Resolution of Necessity – Segment 4 parcels by VTA**
 - SWS real estate approval by Caltrain [Real Estate]*
 - *SWS real estate approval by SamTrans**
 - Approval to execute Pacific Gas and Electric (PG&E) Supplemental Agreement #3: Final Design [Engineering]*
 - Award of SCADA sole source [Project Delivery]*
 - Ambassador Request for Proposal award [External Affairs]*
- August
 - Quarterly Update presentation to board (in support of Executive Director's report) [Program Management]
- To Be Scheduled
 - Approval to execute PG&E Supplemental Agreement #4: Construction [Engineering]*
 - Authority to procure used electric locomotives [Project Delivery]*

*Dependent on FTA issuance of FFGA

Italics indicates board/council approvals by other agencies

2.4 Government and Community Affairs

A number of community relations and outreach events took place during the month of April. PCEP team participated in a total of nine meetings with stakeholders.

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 OCS for the distribution of electrical power to the EMUs. The OCS will be powered from a 25-kilovolt (kV), 60-Hertz, single phase, alternating current (AC) 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 provided comments for 65% OCS layout for Segment 2, Work Areas 5 and 4 to the contractors for incorporation in the next iteration of design submittals.
- The PCEP team reviewed signal and communication design submittals and returned comments to the contractors. The project team reviewed traction power site, system specifications and the interim load flow analysis.
- The PCEP and BBII teams continued to hold regular workshop meetings to discuss design related to the signal system including the conversion from direct current to AC and the Constant Warning Time solution. The PCEP team provided current as-built signal drawings for all work segments to BBII for advancement of 65% design.
- BBII continued pothole location layouts and preparation of test results from geotechnical borings. The results are anticipated in the upcoming month.
- Potholing of utilities at proposed OCS locations continued in Segment 4 Work Areas A and B. Results from potholing are used for design purposes in the 65% design submittals. Potholing of signal cables for signal design and construction continued in Segment 4.
- Coordination efforts with PG&E continued for infrastructure improvements and TPS interconnects. The PCEP team continues to work with PG&E for the finalization of Power Quality and Protection Scheme Studies. BBII is interviewing PG&E preferred teams for the interconnection with PG&E at both TPSs. A shortlist of sub-contractors will be presented to the PCEP team in May.

Activity Next Month

- Continue to work with BBII on design and field investigation activities. The designs will include the continued progression of the OCS and Signal systems and other civil infrastructures such as overhead bridge protections.
- Continue potholing activities at proposed OCS locations. Potholing will continue in Segment 4 and move into Segment 2, Work Area 3 as BBII advances the OCS design at specific locations.

- Continue potholing of signal cables in all segments in support of signal system design.
- Begin testing and inspection of signal cables in support of signal system design.
- Coordination efforts will continue with PG&E on interconnection design and final design for PG&E infrastructure. The PCEP and BBII teams will continue design and coordination of the 115 kV interconnections between PG&E and Caltrain's future substations. PG&E approved sub-contractors will be selected for the design of the 115 kV interconnections. Coordination meetings continue to be held every two weeks.

3.2 Supervisory Control and Data Acquisition (SCADA)

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

Activity This Month

- The PCEP team received and responded to proposer's questions. The response to the Request for Proposals is expected to be received in May.

Activity Next Month

- Receive and review SCADA 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 has requested the PCEP team 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 DB contractor's efforts in Segment 1.

Activity This Month

- The PCEP team continued coordination efforts with the design team on drawings and specifications on Tunnel 1 and Tunnel 4 Drainage Rehab Project.
- PCEP team continued coordination efforts with Union Pacific Railroad (UPRR) and other stakeholders.
- The PCEP team presented the 95% design to Caltrain Engineering. The review of the 95% submittals is complete and the PCEP team will compile and respond to comments.

Activity Next Month

- UPRR will be provided 95% drawings for review and comment.
- PCEP staff will meet with Caltrain internal stakeholders to review and resolve comments on 95% design drawings and specifications.
- PCEP staff will conduct a constructability review with Caltrain internal stakeholders.
- PCEP staff will begin to advance design for 100% Plans and Specifications.

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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 fixed trainsets. Power will be obtained from the OCS via roof-mounted pantographs, which will power the electric traction motors. The EMUs will replace a portion of the existing diesel locomotives and passenger cars currently in use by Caltrain.

Activity This Month

- Stadler continued to progress numerous management submittals, including the MPS, an updated 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.
- On April 24th and 25th Caltrain internal stakeholders visited KISS bi-level EMU trainset operators SBB and BLS. Numerous Maintenance and Operations Centers were also visited.
- The Cab and Console Mockup review was conducted on April 26th and 27th at Stadler's facility.
- The PCEP team continues to address system-wide interface issues involving the emerging EMU design and the existing wayside infrastructure, the Electrification Project, and the CBOSS Project.

Activity Next Month

- PCEP team will continue to review for approval several documents including the MPS, the System Safety Plan, the Master Test Plan, and CDRL.
- Stadler is scheduled to visit San Mateo the last week in May for further technical and commercial discussions.

4.1 Centralized Equipment Maintenance and Operations Facility (CEMOF) Modifications

The CEMOF Modifications project will provide safe work areas for performing maintenance on the new EMUs.

Activity This Month

- There were no related activities this month.

Activity Next Month

- Evaluate conceptual design options for CEMOF modification requirements.

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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 BBII and Stadler's safety and security contract documentation deliverables to ensure they meet PCEP requirements. Safety staff has been facilitating meetings with BBII and Stadler to advance project safety and security program implementation.
- A Fire/Life Safety & Security Committee (FLSSC) meeting was held on April 26, 2017 for the PCEP. Representatives from the California Public Utilities Commission (CPUC), transit police and seven local fire departments participated. Planning for future Emergency Training was discussed.
- Revisions to the Safety and Security Management Plan (SSMP) were made and the SSMP was submitted to the Project Management Oversight Contractor for review.
- The PCEP team met with the SFMTA to discuss the 16th 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 meeting for the Safety and Security Certification Review Committee (SSCRC) will be held for the development and review of certifiable elements including critical safety items for all aspects of the project.
- Monthly meeting for the FLSSC will be held.
- Site visits to BBII 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

- The audit of BBII’s design quality control and the OCS 65% design package is now closed with revisions of the BBII Design Quality Plan.
- QA review of Stadler’s BBII’s Quality Management Plan (QMP), which includes a Design Quality Plan, was previously conducted with comments outstanding.
- Staff meetings with BBII QA/Quality Control management representatives continue bi-weekly.
- An audit of BBII/PGH Wong/Alstom 65% design of the Signals Design Package was conducted with no findings.
- An audit of BBII/PGH Wong/STV 65% design of the Communications Design Package was conducted with no findings.
- An audit of the BBII/PGH Wong 65% design of the Wayside Power Cabinets was conducted with no findings.

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
Audits Conducted	3	23
Audit Findings		
Audit Findings Issued	0	16
Audit Findings Open	0	0
Audit Findings Closed	3	16
Non-Conformances		
Non-Conformances Issued	0	4
Non-Conformances Open	0	0
Non-Conformances Closed	0	4

Activity Next Month

- Three audits are planned and scheduled: Cooper Testing Lab, Inspection Services, Inc., and BBII Document Control.
- QA review of Stadler's QMP Design Quality Plan revision for EMU procurement.
- Regularly scheduled design reviews and surveillances will begin on project design packages and will continue through the late summer.

7.0 SCHEDULE

The MPS has been frozen as of the end of February 2017. The freeze of the schedule is due to delays to federal funding (FFGA), which has resulted in delays in issuing FNTPs to the Electrification DB contractor and EMU manufacturer. These delays extend to additional program elements as well. While the effect of these delays is being evaluated, there will be no formal update to the MPS.

As indicated in Table 7-1, the RSD, which is the date in which the project is deemed completed, remains unchanged in the 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 (January 2017) and the current update (February 2017) to capture any potential changes in the schedule. A complete summary 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

Due to delays to federal funding (FFGA), FNTPs were not issued to the Electrification DB contractor and EMU manufacturer on the forecasted date of March 1, 2017. It is anticipated that an FFGA will be issued as part of the President's budget by mid-June 2017. As such, the MPS will be frozen until the impact of the delayed FNTPs will have on the overall schedule are better understood.

Peninsula Corridor Electrification Project
Monthly Progress Report

Table 7-1 Schedule Status

Milestones ^{1,2}	Program Plan	January	February
Receipt of FFGA	12/15/2016	02/15/2016	mid-June
FNTP to Electrification DB Contractor	N/A	03/01/2017	TBD
FNTP to EMU Manufacturer	N/A	03/01/2017	TBD
Start of Electrification Major Construction	03/20/2017	07/24/2017	07/24/2017
First Eight Miles of Electrification Complete to Begin Testing	04/08/2019	10/08/2019	10/08/2019
Delivery of First 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:

¹ 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 DB and EMU contractors, changes to milestones will be thoroughly vetted prior to reflecting those changes in the Monthly Report.

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

Table 7-2 Critical Path Summary

Activity	Start	Finish
Full Funding Grant Agreement (FFGA) ¹	mid-June	mid-June
Electrification Design to Begin Major Construction	09/06/2016	07/21/2017
EMU Design to Delivery of First Car Shell to Assembly Facility	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 ¹	08/31/2020	08/31/2020
Vehicle Manufacturing & Assembly to Provide First Five Trainsets	11/13/2017	09/09/2020
Pre-Revenue Operations	09/22/2020	12/10/2020
Potential Limited Service ¹	12/31/2020	12/31/2020
RSD w/out Risk Contingency ¹	08/16/2021	08/16/2021
RSD w/ Risk Contingency ¹	12/30/2021	12/30/2021

Note:

¹ Milestone activity

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

WBS	Activity	Responsibility
Utilities	PG&E Supplemental Agreement #3 for Final Design Approval (on hold until FFGA)	Project Delivery
Utilities	PG&E Final Design (on hold until FFGA)	Project Delivery
Utilities	Overhead Utility Relocation	Project Delivery

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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) ¹	Cost To Date (C) ²	Estimate To Complete (D)	Estimate At Completion (E) = (C) + (D)
ELECTRIFICATION					
Electrification ³	\$ 696,610,558	\$ 9,568,718	\$ 92,565,868	\$ 604,044,690	\$ 696,610,558
Tunnel Notching	\$ 11,029,649	\$ -	\$ -	\$ 11,029,649	\$ 11,029,649
Real Estate	\$ 28,503,369	\$ 192,171	\$ 6,363,714	\$ 22,139,655	\$ 28,503,369
Private Utilities	\$ 63,515,298	\$ 334,969	\$ 4,930,626	\$ 58,584,673	\$ 63,515,298
Management Oversight ⁴	\$ 141,526,164	\$ 1,542,879	\$ 66,717,403	\$ 74,808,761	\$ 141,526,164
Executive Management	\$ 7,452,866	\$ 83,857	\$ 3,064,316	\$ 4,388,550	\$ 7,452,866
Planning	\$ 7,281,997	\$ 145,205	\$ 4,526,145	\$ 2,755,852	\$ 7,281,997
Community Relations	\$ 2,789,663	\$ 39,829	\$ 992,023	\$ 1,797,640	\$ 2,789,663
Safety & Security	\$ 2,421,783	\$ 25,301	\$ 585,240	\$ 1,836,543	\$ 2,421,783
Project Management Services	\$ 19,807,994	\$ 108,132	\$ 7,568,513	\$ 12,239,481	\$ 19,807,994
Engineering & Construction	\$ 11,805,793	\$ 182,731	\$ 2,129,204	\$ 9,676,589	\$ 11,805,793
Electrification Engineering & Management	\$ 50,461,707	\$ 730,463	\$ 17,018,594	\$ 33,443,113	\$ 50,461,707
IT Support	\$ 331,987	\$ -	\$ 331,987	\$ 0	\$ 331,987
Operations Support ⁵	\$ 1,445,867	\$ (3,112)	\$ 390,705	\$ 1,055,162	\$ 1,445,867
General Support	\$ 4,166,577	\$ 56,360	\$ 1,477,303	\$ 2,689,275	\$ 4,166,577
Budget / Grants / Finance	\$ 1,229,345	\$ 26,847	\$ 286,969	\$ 942,376	\$ 1,229,345
Legal	\$ 2,445,646	\$ 84,108	\$ 2,202,692	\$ 242,955	\$ 2,445,646
Other Direct Costs	\$ 5,177,060	\$ 63,158	\$ 1,810,356	\$ 3,366,704	\$ 5,177,060
Prior Costs 2002 - 2013	\$ 24,707,878	\$ -	\$ 24,333,358	\$ 374,520	\$ 24,707,878
TASI Support	\$ 55,275,084	\$ 396,426	\$ 2,149,817	\$ 53,125,266	\$ 55,275,084
Insurance	\$ 4,305,769	\$ -	\$ 1,155,769	\$ 3,150,000	\$ 4,305,769
Environmental Mitigations	\$ 14,972,645	\$ -	\$ 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 ⁶	\$ 5,056,838	\$ (2,456)	\$ 220,724	\$ 4,836,114	\$ 5,056,838
Contingency	\$ 276,970,649	\$ -	\$ -	\$ 276,970,649	\$ 276,970,649
Owner's Reserve	\$ -	\$ -	\$ -	\$ -	\$ -
ELECTRIFICATION SUBTOTAL	\$ 1,316,125,208	\$ 12,032,707	\$ 174,942,948	\$ 1,141,182,260	\$ 1,316,125,208

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. Final March 2017 invoice from Contractor was \$579,000 higher than the accrual amount shown in the March 2017 report. The correction is accounted within the accruals for April 2017.
4. The agency labor is actual through March 2017 and accrued from April 2017 to current reporting period.
5. "Operations Support" carried a higher accrual in March 2017 than actuals. The correction is reflected in April 2017.
6. "Finance Charges" carried a higher accrual in March 2017 than actuals. The correction is reflected in April 2017.

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Table 8-2 EMU Budget & Expenditure Status

Description of Work	Budget (A)	Cost This Month (B) ¹	Cost To Date (C) ²	Estimate To Complete (D)	Estimate At Completion (E) = (C) + (D)
EMU	\$ 550,899,459	\$ -	\$ 13,918,140	\$ 536,981,319	\$ 550,899,459
CEMOF Modifications	\$ 1,344,000	\$ -	\$ -	\$ 1,344,000	\$ 1,344,000
Management Oversight ³	\$ 64,139,103	\$ 689,587	\$ 19,437,964	\$ 44,701,139	\$ 64,139,103
Executive Management	\$ 5,022,302	\$ 124,646	\$ 1,807,197	\$ 3,215,105	\$ 5,022,302
Community Relations	\$ 1,685,614	\$ 14,820	\$ 337,839	\$ 1,347,776	\$ 1,685,614
Safety & Security	\$ 556,067	\$ 13,574	\$ 184,169	\$ 371,898	\$ 556,067
Project Management Services	\$ 13,275,280	\$ 69,609	\$ 5,071,511	\$ 8,203,769	\$ 13,275,280
Engineering & Construction	\$ 89,113	\$ -	\$ 23,817	\$ 65,296	\$ 89,113
EMU Engineering & Management	\$ 32,082,556	\$ 315,668	\$ 8,701,114	\$ 23,381,443	\$ 32,082,556
IT Support	\$ 1,027,272	\$ 10,774	\$ 262,779	\$ 764,494	\$ 1,027,272
Operations Support ⁴	\$ 1,878,589	\$ (1,244)	\$ 296,853	\$ 1,581,736	\$ 1,878,589
General Support	\$ 2,599,547	\$ 29,566	\$ 695,795	\$ 1,903,752	\$ 2,599,547
Budget / Grants / Finance	\$ 712,123	\$ 14,875	\$ 152,270	\$ 559,853	\$ 712,123
Legal	\$ 1,207,500	\$ 56,964	\$ 788,272	\$ 419,228	\$ 1,207,500
Other Direct Costs	\$ 4,003,139	\$ 40,335	\$ 1,116,349	\$ 2,886,790	\$ 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 ⁵	\$ 1,941,800	\$ (1,505)	\$ 135,282	\$ 1,806,518	\$ 1,941,800
Contingency	\$ 38,562,962	\$ -	\$ -	\$ 38,562,962	\$ 38,562,962
Owner's Reserve	\$ -	\$ -	\$ -	\$ -	\$ -
EMU SUBTOTAL³	\$ 664,127,325	\$ 688,082	\$ 33,491,387	\$ 630,635,938	\$ 664,127,325

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. The agency labor is actual through March 2017 and accrued for April 2017 to current reporting period.
4. "Operations Support" carried a higher accrual in March 2017 than actuals. The correction is reflected in April 2017.
5. "Finance Charges" carried a higher accrual in March 2017 than actuals. The correction is reflected in April 2017.

Table 8-3 PCEP Budget & Expenditure Status

Description of Work	Budget (A)	Cost This Month (B) ¹	Cost To Date (C) ²	Estimate To Complete (D)	Estimate At Completion (E) = (C) + (D)
Electrification Subtotal	\$ 1,316,125,208	\$ 12,032,707	\$ 174,942,948	\$ 1,141,182,260	\$ 1,316,125,208
EMU Subtotal	\$ 664,127,325	\$ 688,082	\$ 33,491,387	\$ 630,635,938	\$ 664,127,325
PCEP TOTAL	\$ 1,980,252,533	\$ 12,720,789	\$ 208,434,335	\$ 1,771,818,198	\$ 1,980,252,533

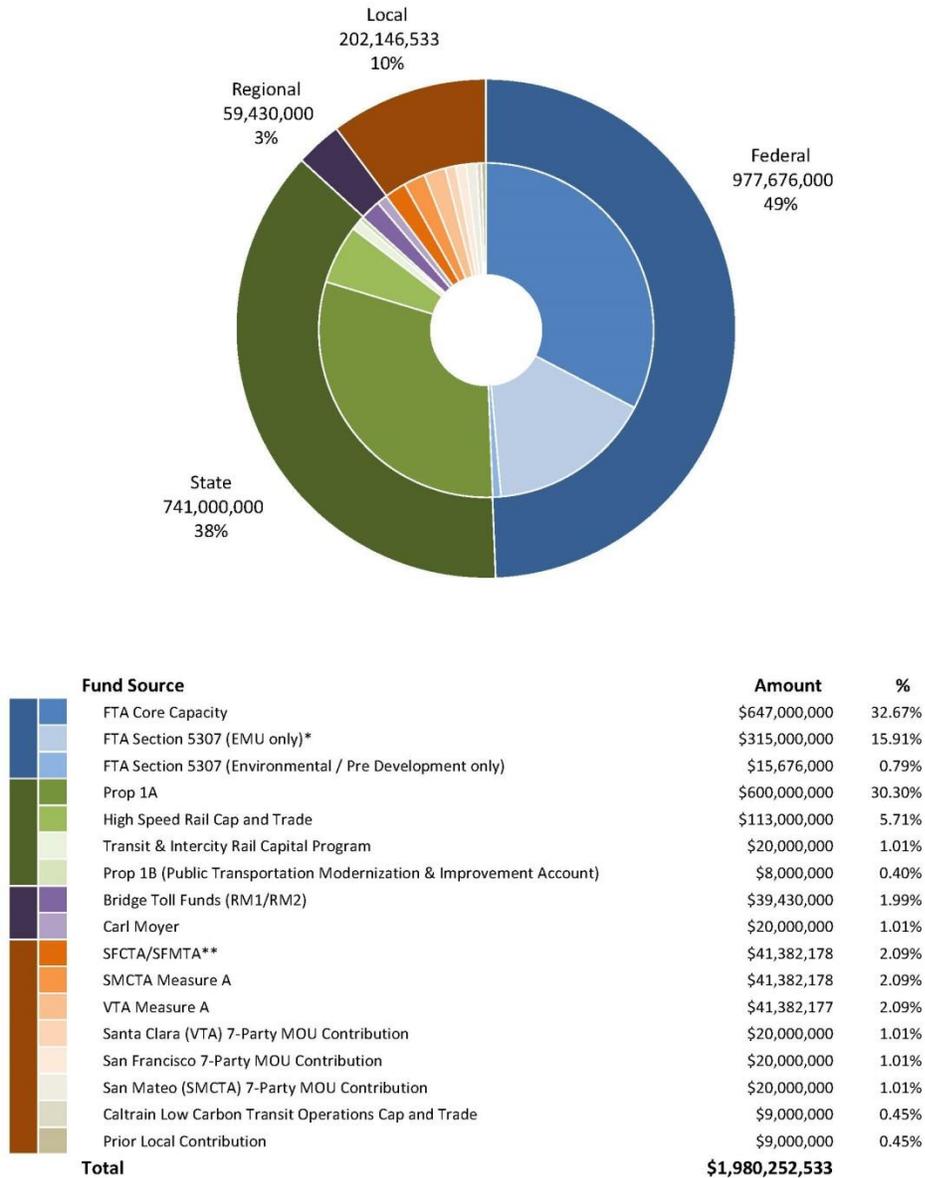
Notes regarding tables above:

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.

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, the FTA informed the JPB it would be deferring execution of the FFGA until the Administration developed the President’s FY2018 Budget. Caltrain staff continue to work with the FTA, legislators and other project stakeholders to secure the FFGA for the project.

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 meets monthly to identify risks and corresponding mitigation measures. Each risk is graded based on the potential cost and schedule impacts they could have on the project. This collection of risks has the greatest potential to affect the outcome of the project and consequently are monitored most closely. For each of the noted risks, as well as for all risks on the risk register, mitigation measures have been identified and are being implemented. Progress in mitigating these risks is confirmed at monthly risk assessment meetings attended by project team management and through continuous monitoring of the Risk Management Lead.

The team has identified the following items as top 10 risks for the project:

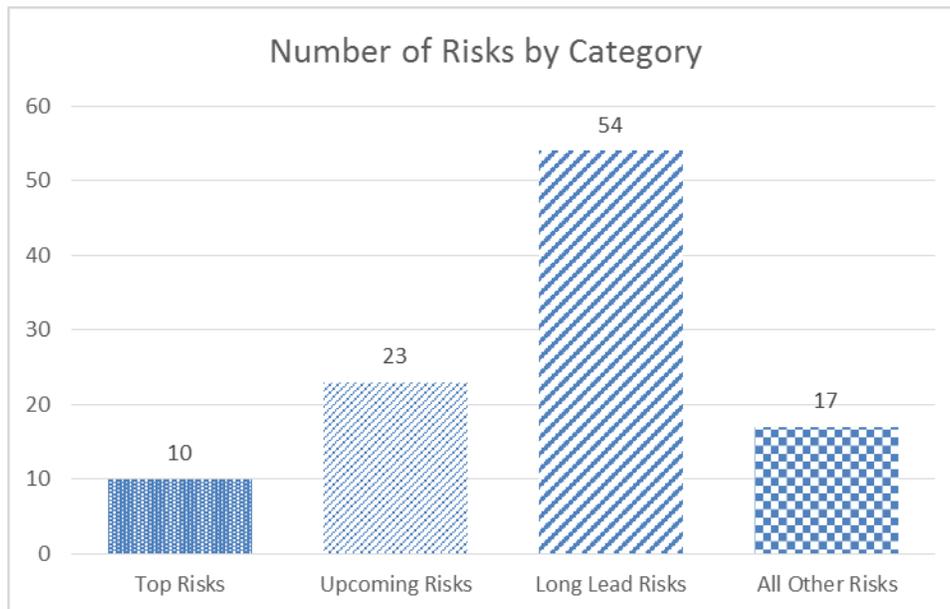
- Delay in execution of FFGA would cause a delay in issuing FNTF.
- Upgrades to the PG&E power stations for permanent power may not be designed and constructed in time for initiation of limited revenue service.
- Relocation of overhead utilities must precede installation of catenary wire and connections to TPSs. Relocation work will be performed by others and may not be completed to meet the DB contractor's construction schedule.
- As-built drawings furnished to DB contractor could be incomplete thus affecting final design.
- Delays to the CBOSS Project could affect PCEP testing activities.
- Transit America Services, Inc.'s ability to deliver sufficient resources to support construction and testing for the electrification contract may cause delays to construction schedule.
- Relocation of underground utilities must precede construction of catenary pole foundations and may not be completed in time to meet the DB contractor's construction schedule.
- Inconsistencies within internal processes, such as the Site Specific Work Plan, could delay decision making and approvals thereby impeding construction progress.
- Grade crossing design modifications to accommodate the 25kV traction power system could result in delays.
- The absence of in-house agency personnel to lead the system integration effort could result in a lack of coordination to interdisciplinary design elements.

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. Five risks were retired. Wording of five risks were revised and mitigations modified for one risk. One risk was reviewed in detail by the committee. A decision was made to initiate risk management coordination with the DB contractor in June.

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 composed 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.

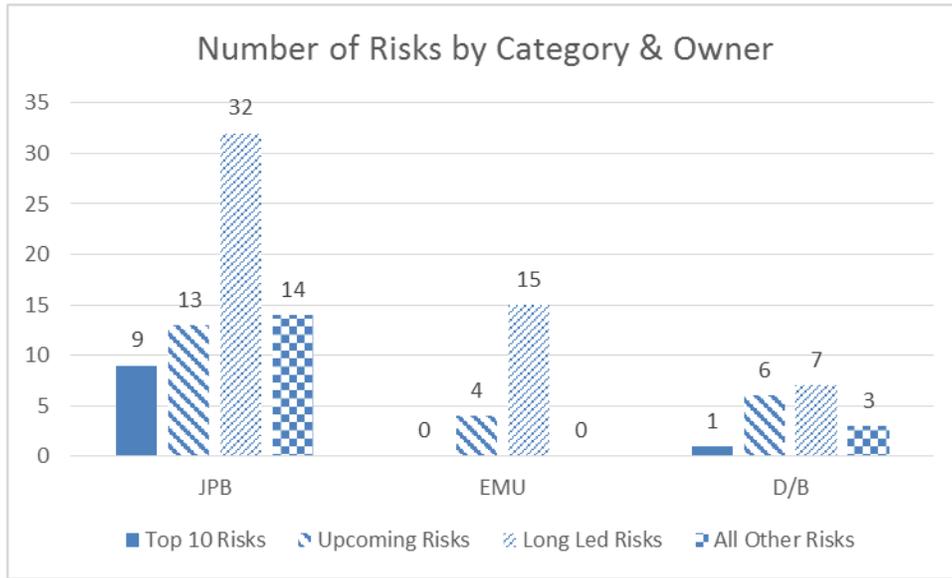
Table 10-1 Monthly Status of Risks



Total Number of Active Risks = 104

(Revisions from the most recent Risk Assessment Committee meeting are not reflected in this graphic.)

Table 10-2 Risk Classification



Total Number of Active Risks = 104

(Revisions from the most recent Risk Assessment Committee meeting are not reflected in this graphic.)

Activity Next Month

- Update risk descriptions, effects, mitigations and retirement dates.
- Conduct weekly monitoring of risk mitigation actions and continue publishing risk register.

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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, San Francisco Bay Regional Water Quality Control Board, the California Department of Fish and Wildlife, and the San Francisco Bay Conservation Development Commission.

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 (MMRP)

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 MMRP to ensure that mitigation measures identified in the PCEP Environmental Impact Report (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

- Environmental compliance 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 impacts on sensitive environmental resources.
- Protocol-level surveys for sensitive avian species continued at previously identified potential habitat locations and surveys for nesting birds ahead of design phase activities continued (nesting bird season is February 1st through August 31st).

Activity Next Month

- Environmental compliance monitors will continue to monitor design phase investigation activities (geotechnical and potholing activities) occurring in areas that require environmental compliance monitoring.
- Biological surveyors will continue surveys for nesting birds ahead of design phase investigation activities occurring during the nesting bird season and biological survey teams 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 provided utility height data in order enable moving forward with the design for PG&E utility relocation.
- PCEP team continued to work with Verizon to resolve the relocation of fiber optics cable within the Caltrain right of way (ROW).

Activity Next Month

- Monthly meetings will continue with telecom and power carriers.
- PCEP team will continue to coordinate with utility owners on the next steps of relocations, including support of any required design information.
- 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 ROWs 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., TPSs, SSs, and PSs). 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 agency continues to negotiate the cooperative agreement for eminent domain authority with the City and County of San Francisco. The target for completion is June 2017.
- In Segment 2, four offers were authorized.

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, with all expected to be completed in June.

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
Segment 1	8	0	0	0	0	0	0
Segment 2	27	26	25	14	13	0	13
Segment 3	11	2	0	0	0	0	0
Segment 4	9	9	8	0	0	0	0
Total	55	37	33	14	13	0	13

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.

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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 ¹	City & 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	PG&E	Executed ²
	Operating Rules	CPUC	Executed
Transportation & Railroad	Construction & Maintenance	Bay Area Rapid Transit	Executed ³
	Construction & Maintenance	California Dept. of Transportation (Caltrans)	Not needed ⁴
	Trackage Rights	UPRR	Executed ³

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 17 cities and three counties along the Caltrain ROW and within the PCEP limits in connection with the design and construction of the PCEP.
- ². The Master Agreement and Supplemental Agreements 1, 2 and 5 have been executed. Supplemental Agreements 3 and 4 are to be negotiated and executed.
- ³. Utilizing existing agreements.
- ⁴. 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 DB contractor's effectiveness in implementing its Public Involvement Program. The following PCEP-related external affairs meetings took place in April:

- **Presentations/Meetings**
 - City/County Staff Coordinating Group
 - Local Policy Maker Group
 - Caltrain Commuter Coalition
 - San Mateo County Economic Development Association (2)
 - Progress Seminar
 - Peninsula Corridor Working Group
 - Menlo Park Chamber
 - FTA Quarterly PCEP Meeting
- **Third Party/Stakeholder Actions**
 - None to report

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**16.0 DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION AND
LABOR STATISTICS**

DBE and labor statistics will be reported after construction has commenced.

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17.0 PROCUREMENT

Contract Activity

- No contract activities for April.

Invitation for Bid (IFB)/Request for Qualifications (RFQ)/ Request for Proposals (RFP) Issued this Month:

- No solicitations issued for April.

IFB/RFQ/RFP Received this Month:

- RFP #17-J-U-77 – Received proposal for On-Call Consulting Support Services for PG&E Infrastructure Improvements for PCEP.
- RFP #17-J-U-076 – Received proposal for On-Call Technical Consulting Support Services for PG&E's Substations for PCEP.

Contract Awards this Month:

- No contract awards were made for April.

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

- Multiple WDs & POs were issued to support the program needs for April.

Upcoming IFB/RFQ/RFP:

- RFP - On-Call Ambassador Support Services. (Issue in May).
- RFP - On-Call Quality Assurance Independent Testing Laboratory (Issue in Late April).

Upcoming Contract Awards:

- Contract #17-J-Q-072 - Ambassador Services (Short-term Agreement).
- Contract #17-J-U-77 – On-Call Consulting Support Services for PG&E Infrastructure Improvements for PCEP.
- Contract #17-J-U-076 – On-Call Technical Consulting Support Services for PG&E's Substations for PCEP.
- Contract #17-J-S-061- Advanced Information Management (AIM) Traction Power Supervisory and Data Acquisition (SCADA) System for PCEP.

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18.0 TIMELINE OF MAJOR PROJECT ACCOMPLISHMENTS

Below is a timeline showing major project accomplishments from 2001 to 2017:

Date	Milestone
2001	Began Federal NEPA Environmental Assessment (EA) / State EIR Clearance Process
2002	Conceptual Design Completed
2004	Draft NEPA EA/EIR
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 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 BBII, the apparent best-value Electrification firm JPB Approves Contract Award (LNTP) BBII JPB Approves Contract Award (LNTP) Stadler FTA approval of Entry into Engineering for the Core Capacity Program Application for Full Funding Grant Agreement (FFGA)
2017	FTA finalized the FFGA for \$647 million in Core Capacity funding, met all regulatory requirements including end of Congressional Review Period (Feb 2017)

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APPENDICES

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Appendix A – Acronyms

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**Peninsula Corridor Electrification Project
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AIM	Advanced Information Management	EIR	Environmental Impact Report
ARINC	Aeronautical Radio, Inc.	EMU	Electric Multiple Unit
BAAQMD	Bay Area Air Quality Management District	ESA	Endangered Species Act
BBII	Balfour Beatty Infrastructure, Inc.	ESA	Environmental Site Assessments
CAISO	California Independent System Operator	FEIR	Final Environmental Impact Report
CalMod	Caltrain Modernization Program	FNTF	Full Notice to Proceed
Caltrans	California Department of Transportation	FFGA	Full Funding Grant Agreement
Caltrans	California Department of Transportation	FONSI	Finding of No Significant Impact
CDFW	California Department of Fish and Wildlife	FRA	Federal Railway Administration
CEMOF	Centralized Equipment Maintenance and Operations Facility	FTA	Federal Transit Administration
CEQA	California Environmental Quality Act (State)	GO	General Order
CHSRA	California High-Speed Rail Authority	HSR	High Speed Rail
CIP	Capital Improvement Plan	ICD	Interface Control Document
CPUC	California Public Utilities Commission	ITS	Intelligent Transportation System
DB	Design-Build	JPB	Peninsula Corridor Joint Powers Board
DBB	Design-Bid-Build	LNTF	Limited Notice to Proceed
DBE	Disadvantaged Business Enterprise	MMRP	Mitigation, Monitoring, and Reporting Program
DEMP	Design, Engineering, and Management Planning	MOU	Memorandum of Understanding
EA	Environmental Assessment	MPS	Master Program Schedule
EAC	Estimate at Completion	NCR	Non Conformance Report
		NEPA	National Environmental Policy Act (Federal)

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NHPA	National Historic Preservation Act	RRP	Railroad Protective Liability
NMFS	National Marine Fisheries Service	RSD	Revenue Service Date
NTP	Notice to Proceed	RWP	Roadway Worker Protection
OCS	Overhead Contact System	SamTrans	San Mateo County Transit District
PCEP	Peninsula Corridor Electrification Project	SCADA	Supervisory Control and Data Acquisition
PCJPB	Peninsula Corridor Joint Powers Board	SCC	Standard Cost Code
PG&E	Pacific Gas and Electric	SPUR	San Francisco Bay Area Planning and Urban Research Association
PHA	Preliminary Hazard Analysis	SFBCDC	San Francisco Bay Conservation Development Commission
PMOC	Project Management Oversight Contractor	SFCTA	San Francisco County Transportation Authority
PS	Paralleling Station	SFMTA	San Francisco Municipal Transportation Authority
PTC	Positive Train Control	SFRWQCB	San Francisco Regional Water Quality Control Board
QA	Quality Assurance	SOGR	State of Good Repair
QC	Quality Control	SS	Switching Station
QMP	Quality Management Plan	SSCP	Safety and Security Certification Plan
QMS	Quality Management System	SSMP	Safety and Security Management Plan
RAMP	Real Estate Acquisition Management Plan	SSWP	Site Specific Work Plan
RE	Real Estate	TASI	Transit America Services Inc.
RFI	Request for Information	TBD	To Be Determined
RFP	Request for Proposals	TPS	Traction Power Substation
RFQ	Request for Qualifications		
ROCS	Rail Operations Center System		
ROW	Right-of-Way		

TVA	Threat and Vulnerability Assessment
UPRR	Union Pacific Railroad
USACE	United States Army Corp of Engineers
USFWS	U.S. Fish and Wildlife Service
VTA	Santa Clara Valley Transportation Authority

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Appendix B – Schedule

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