December 2019
Monthly Progress Report

December 31, 2019
Funding Partners

Federal Transit Administration (FTA) Core Capacity
FTA Section 5307 (Environmental / Pre Development only)
FTA Section 5307 (Electric Multiple Unit (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

City and County of San Francisco (CCSF) 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 2021, 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.
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 and respective work areas (WA) as shown in Figure 2-1. PCEP activities are described and summarized by segments and work areas.

Figure 2-1 PCEP Work Segments
Electrification infrastructure construction activities this month include installation of OCS foundations in Segment 3, gantry foundations at Paralleling Station (PS) PS-6, and potholing in all segments. Signal conduit surveying was performed in Segments 2 and 4. Numerous other typical construction activities continued this month, including ductbank and conduit installation, installation of OCS poles, down guys, balance weights, and relocation of signal cables.

Final Design Reviews continue to be performed for the EMUs, and First Article Inspections continue to be conducted and closed (54 of 64 have been closed). A quality audit was conducted on Stadler electrical tests on completed cars with satisfactory results.

The Centralized Equipment Maintenance and Operations Facility construction activities included completion of shoring for the south pit and preparation for ongoing construction of the storage facility.

2.1. Monthly Dashboards

Dashboard progress charts are included below to summarize construction progress.

**Figure 2-2 Expenditure – Planned vs. Actual**
Figure 2-3 Spending Rate vs. Required

![Spending Rate vs. Required Graph]

Figure 2-4 Construction Contract Budgets

![Construction Contract Budgets Graph]

Notes:
(1) 3rd Party improvements/CHPA consists of the following “below-the-line” project:
   - Balfour Beatty: $1,206,000 Total:
     - CHSPA Early Pay Relocation (Design Only): $625,000
     - TPS-2 VTA/BART Pole Relocation (Design Only): $180,000
     - TPS-2 VTA/PCE Pole Height (Redesign): $21,000
     - Relocation of P-1 (Congestion): $300,000
   - Stadler ($174,716,397 Total):
     - EMU Options O&G: $173,800,047
   - Add Fix-Up B Santa Mts Bike Cars: $19,461,350

(2) Includes only negotiated change orders not yet executed.
Figure 2-5 OCS Foundation Production

Figure 2-6 Contractor Completion Schedule
2.2. Funding Partners Participation in PCEP

The PCEP has a series of weekly, biweekly, monthly and quarterly meetings to coordinate all aspects of the program. The meetings are attended by project staff with participation by our funding partners in accordance with the Funding Partners Oversight Protocol. A summary of funding partner meetings and invitees can be found in Appendix B.

This section of the report provides a summary of the discussions and decisions made at the meetings and a list of funding partners who attended the meetings.

Electrification – Engineering Meeting – Weekly

Purpose: To discuss status, resolution and tracking of Balfour Beatty Infrastructure, Inc. (BBII) and electrification design-related issues, to discuss Supervisory Control and Data Acquisition (SCADA), the Tunnel Modification Project, and monitor the progress of utility relocation compared to schedule, and to discuss third-party coordination activities with Pacific Gas and Electric (PG&E), CHSRA, Union Pacific Rail Road (UPRR), Bay Area Rapid Transit, California State Department of Transportation (Caltrans), Positive Train Control (PTC) and others.

Activity this Month

Funding Partners: CHSRA: Ian Ferrier

Continued discussions on resolution of outstanding issues for the Design-Build (DB) contract, such as:

- Grade crossing designs, including progress of design and ongoing meetings with key stakeholders such as the Federal Railroad Administration (FRA), California Public Utilities Commission (CPUC) and local jurisdictions
- OCS foundation design, poothing status, and foundation installation sequencing
- Key right of way acquisition issues as related to construction activities
- Review of key actions from weekly BBII progress meetings, status of critical submittals or Requests for Information (RFI), open non-conformance reports, and open critical issues from the Design Build (DB) contract
- The progression of the PG&E interconnections design and material procurement status, including interface with VTA on the design of TPS-2 interconnection into PG&E’s FMC Substation
- The progression of the PG&E single phase study including next steps to resolve comments from PG&E and Silicon Valley Power (SVP), which will be required for the energization of the system
- Key interface points (foundation installation, signal design, etc.) between the PCEP and other major Peninsula Corridor Joint Powers Board (JPB) projects such as South San Francisco Station Project, 25th Avenue Grade Separation Project, and Broadway Grade Separation Project
- The utility relocation status
- Status of the upcoming work for the Tunnel OCS
- Updates on DB and program schedule, including key foundation and traction power facility milestones, PG&E Infrastructure buildout and power quality study status

- Upcoming changes to the contract in preparation for the Change Management Board (CMB) and specific contract change orders that require technical review and input

**PCEP Delivery Coordination Meeting – Bi-Weekly**

Purpose: To facilitate high-level coordination and information sharing between cross-functional groups regarding the status of the work for which they are responsible.

**Activity this Month**

Funding Partners: CHSRA: Ian Ferrier; SFCTA: Luis Zurinaga

The Project Management Oversight Consultant (PMOC) met with staff on December 16 – 18 and observed construction activities on the field. The Federal Transit Administration (FTA) Quarterly and the CHSRA/Funding Partners Quarterly meetings are both scheduled to occur on January 22. In response to the FTA triennial audit, although no deficiencies were identified for PCEP, staff attended the ICE and Cost/Price Analysis training that occurred on December 4. In EMU design and manufacturing, the 4th trainset of carshells has been completed in Altenrhein and released for shipment. In Winterthur, manufacturing of the 4th and 5th trainsets of truck frames are complete, and in Salt Lake City, wiring and circuit verification tests are ongoing of the first trainset of cars. For construction and field activities, on-tracking for S3WA2 is complete and the planning and scheduling of off-track foundations in S3WA2 is underway. Installation of poles continue in S4, completion of form and rebar work and high voltage cable installation continue in TPS-2, and manhole and ductbank installation, form and rebar work, and drainage work continue at TPS-1. Ductbank and manhole installation continues at SWS-1 and PS-6. In the Tunnel Modification Project, drop tube installation started on December 3 with 38 drop tubes installed as of December 10.

**Systems Integration Meeting – Bi-Weekly**

Purpose: To discuss and resolve issues with inter-system interfaces and to identify and assign Action Item Owners for interface points that have yet to be addressed.

**Activity this Month**

Funding Partners: CHSRA: Ian Ferrier

Bi-weekly PCEP interface meetings are held to monitor and determine appropriate resolution for systems integration issues. The systems integration database is being reviewed. Data was recovered from a corrupted database. A spreadsheet for keeping track of Action Items and the individual(s) assigned to these items is the primary tracking method while issues relating to the System Integration database are resolved. Meetings with the electrification contractor to discuss design and construction integration issues are being scheduled as needed. The Systems Integration Lead also maintains contact with the EMU procurement team. The Traction Power SCADA team also holds bi-weekly status meetings. Coordination with the EMU procurement, PTC and Caltrain Capital Project managers responsible for delivery of the 25th Avenue Grade Separation...
Project, Marin Napoleon Bridge Rehabilitation Project, and the South San Francisco Station Project is ongoing. There is coordination with the Tunnel Modification Project and the CEMOF upgrades as well. Progress on activities including systems integration testing activities, FRA, FTA and safety certification are being tracked. Systems Integration is working with the JPB Rail Activation Committee.

**Master Program Schedule (MPS) Meeting – Monthly**

Purpose: To review the status of the MPS and discuss the status of major milestones, critical and near critical paths, upcoming Board review items, and progress with the contracts, among others.

**Activity this Month**

Funding Partners: CHSRA: Ian Ferrier and Wai-On Su, VTA: Manolo Gonzalez-Estay, SFCTA: Luis Zurinaga

The overall schedule remains unchanged from last month. The forecasted Revenue Service Date (RSD) remains May 2022. The addition of approximately three and a half months of contingency yields an RSD of August 2022. The program critical path runs through the manufacturing and testing of EMU trainsets.

**Risk Assessment Meeting – Monthly**

Purpose: To identify risks and corresponding mitigation measures. For each risk on the risk register, mitigation measures have been identified and are being implemented. Progress in mitigating these risks is confirmed at the ongoing risk monitoring and monthly risk assessment meetings.

**Activity this Month**

No meeting was held this month due to lack of agenda items.

**Change Management Board (CMB) – Monthly**

Purpose: To review, evaluate and authorize proposed changes to PCEP over $200,000.

**Activity this Month**

The December CMB was cancelled.

The CMB discusses major topics including potential changes to PCEP contracts, contingency usage, track access delays and Differing Site Conditions (DSC) field order updates.

Potential contract changes will follow the PCEP Change Order Procedure. Once approved changes are executed, they will be reported in the Change Management section (Section 9) of this report.

**BBII Contract**

No changes were identified for consideration.
CEMOF Contract
No changes were identified for consideration.

Stadler Contract
No changes were identified for consideration.

SCADA Contract
No changes were identified for consideration

Tunnel Modification Contract
No changes were identified for consideration.

Amtrak Contract
No changes were identified for consideration.

2.3. Schedule

The overall schedule remains unchanged from last month. The forecasted Revenue Service Date (RSD) remains as May 2022. The program critical path runs through the manufacturing and testing of EMU trainsets.

BBII continues to report an overall delay to substantial completion. JPB is working with BBII on the issue and is urging BBII to accelerate resolution.

The MPS has been updated this month to recognize a delay in arrival of the first trainset in Pueblo, CO due to delayed Stadler production and testing activities. The arrival date of the first vehicle at JPB is unchanged. The anticipated revenue service date of May 2022 is unchanged.
Table 2-1 indicates major milestone dates for the MPS.

### Table 2-1 Schedule Status

<table>
<thead>
<tr>
<th>Milestones</th>
<th>Program Plan</th>
<th>Progress Schedule (December 2019)¹</th>
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<tbody>
<tr>
<td>Arrival of First Vehicle in Pueblo, CO</td>
<td>N/A</td>
<td>09/01/2020</td>
</tr>
<tr>
<td>Arrival of First Vehicle at JPB (after Pueblo Testing)</td>
<td>N/A</td>
<td>02/26/2021</td>
</tr>
<tr>
<td>Segment 4 Completion</td>
<td></td>
<td>02/14/2021²</td>
</tr>
<tr>
<td>o Interconnection from PG&amp;E Substation to Traction Power Substation (TPS)</td>
<td>N/A</td>
<td>09/30/2020²</td>
</tr>
<tr>
<td>PG&amp;E Provides Permanent Power</td>
<td>09/09/2021</td>
<td>09/09/2021</td>
</tr>
<tr>
<td>Electrification Substantial Completion</td>
<td>08/10/2020</td>
<td>01/31/2022²</td>
</tr>
<tr>
<td>Start Phased Revenue Service</td>
<td>N/A</td>
<td>02/01/2022²</td>
</tr>
<tr>
<td>RSD (w/o Risk Contingency)</td>
<td>12/09/2021</td>
<td>05/06/2022</td>
</tr>
<tr>
<td>FFGA RSD (w/ Risk Contingency)</td>
<td>08/22/2022</td>
<td>08/22/2022</td>
</tr>
</tbody>
</table>

Note:

¹ Dates may shift slightly as the update of this month’s Progress Schedule is still in process.
² See “Notable Variances” in Section 7 for explanation on date shift.

### 2.4. 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

<table>
<thead>
<tr>
<th>Description of Work</th>
<th>Budget (A)</th>
<th>Current Budget (B)¹</th>
<th>Cost This Month (C)²</th>
<th>Cost To Date (D)³</th>
<th>Estimate To Complete (E)</th>
<th>Estimate At Completion (F) = (D) + (E)</th>
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<tbody>
<tr>
<td>Electrification Subtotal</td>
<td>$1,316,125,208</td>
<td>$1,316,125,208</td>
<td>$17,476,734</td>
<td>$662,419,619</td>
<td>$653,705,589</td>
<td>$1,316,125,208</td>
</tr>
<tr>
<td>EMU Subtotal</td>
<td>$664,127,325</td>
<td>$664,127,325</td>
<td>$8,089,778</td>
<td>$197,396,342</td>
<td>$466,730,983</td>
<td>$664,127,325</td>
</tr>
<tr>
<td>PCEP TOTAL</td>
<td>$1,980,252,533</td>
<td>$1,980,252,533</td>
<td>$25,566,512</td>
<td>$859,815,961</td>
<td>$1,120,436,572</td>
<td>$1,980,252,533</td>
</tr>
</tbody>
</table>

Notes regarding tables above:

¹ Column B “Current Budget” includes executed change orders and awarded contracts.
² Column C “Cost This Month” represents the cost of work performed this month.
³ Column D “Cost To Date” includes actuals (amount paid) and accruals (amount of work performed) to date.
2.5. Board Actions

- None

Future anticipated board actions include:

- Shunt wire construction
- PG&E interconnect construction
- EMU Pantograph Inspection & Monitoring System contract

2.6. Government and Community Affairs

There were no outreach events this month.
3.0 ELECTRIFICATION – INFRASTRUCTURE

This section reports on the progress of the Electrification, 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 installation of 138 miles of wire and overhead catenary system (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 supply system consisting of two traction power substations (TPS), one switching station (SWS), and seven paralleling stations (PS). Electrification infrastructure will be constructed using a DB delivery method.

Activity This Month

- Installed OCS foundations in S3WA2 and gantry foundations at PS-6.
- Continued to install OCS poles, down guys, and balance weights in Segment 4.
- Potholed at proposed OCS locations and utility locations in all Segments in advance of foundation installation. BBII and PCEP also continued to resolve conflicts found during the potholing process, such as loose concrete, asphalt, and other debris, and continued designing solutions for those conflicts that cannot be avoided. The conflicts must be resolved before installation of foundations at those locations.
- Relocated signal cables and remove abandoned facilities found in conflict with planned OCS foundations as conflicts were identified.
- Continued to install formwork, rebar and high-voltage cable at TPS-2.
- Continued to install ductbank and manholes, drainage, and form and rebar work at TPS-1.
- Continued to install ductbank and manholes at PS-6.
- Continued grading work at PS-7.
- Continued to install ductbanks and manholes at SWS-1.
- Performed clearing and grubbing at PS-4 as a part of ongoing sitework.
- Continued to install signal ductbank and conduits in Segment 4.
- Performed signal conduit survey in Segments 2 and 4.
- Continued drilling of rails for impedance bond connections in Segments 1, 2, 3 and 4 at various control points and crossings.
- Continued installation of insulated joints (IJs) corridor wide.
- Progressed the OCS design with BBII in all segments, which included submittal and review of Design Change Notices for revised foundation locations.
- Coordinated design review with local jurisdictions for the OCS, traction power facilities, and bridge attachments design, including responses to comments from jurisdictions.
• Continued to review and coordinate signal and communication design submittals with BBII.

• Continued discussions with FRA and CPUC on grade crossing design.

• Continued to progress the TPS interconnection design for TPS-1 and TPS-2. Completed review of 90% design for TPS-2. The interconnection is between the PG&E substations and future Caltrain main substations.

• Worked with BBII through Site Specific Work Plans (SSWP) for upcoming field work.

• Continued to work with PG&E and Silicon Valley Power (SVP) for the finalization of single phase studies and came to an agreement on steps to finalize the studies.

• PG&E continued work at East Grand and FMC substations.

A summary of the work progress by segment is provided in Table 3-1 below.

**Table 3-1 Work Progress by Segment**

<table>
<thead>
<tr>
<th>Segment</th>
<th>Work Area</th>
<th>Foundations</th>
<th></th>
<th>Poles</th>
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<tbody>
<tr>
<td></td>
<td>Requiredabc</td>
<td>Completed this Month</td>
<td>Completed to Date</td>
<td>Requiredabc</td>
</tr>
<tr>
<td>1</td>
<td>Tunnels</td>
<td>32</td>
<td>0 32</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>309</td>
<td>0 0</td>
<td>259</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>237</td>
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<td>177</td>
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<td>2</td>
<td>5</td>
<td>243</td>
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<td><strong>Total</strong></td>
<td></td>
<td><strong>3,152</strong></td>
<td><strong>1,464</strong></td>
<td><strong>2,587</strong></td>
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</tbody>
</table>

Note:

a. Foundations required do not match poles required as guy foundations are needed in some locations for extra support.

b. The number of required poles and foundations fluctuate due to design changes.

c. 55 foundations in S2WA5 will be installed by South San Francisco and 64 foundations in S2WA3 will be installed by 25th Avenue.

Activity Next Month

• Continue installation of foundations in S3WA2.

• Continue resolution of DSCs.

• Continue to install protective steel plates for protection of utilities during foundation installation.

• Continue to install OCS poles and assemblies in Segment 4.

• Continue work with BBII on field investigation activities and designs, which will include the progression of the OCS, traction power, bonding and grounding, signal systems, and other civil infrastructure such as overhead bridge protections.
• Pothole and clear obstructions at proposed OCS locations. Potholing will concentrate in Segments 3 and 4.
• Continue construction at TPS-1 and TPS-2.
• Continue construction at PS-7, PS-4, PS-6, and the Switching Station.
• Continue to install conduit and foundations for signal and wayside power cubicle units in Segments 2 and 4.
• Continue to install impedance bond connections.
• Continue to install IJs.
• Continue to install bridge attachments.
• Continue to coordinate with stakeholders on the consistent warning time solution and advance location-specific design.
• Continue to progress location-specific design for grade crossing system.
• Review BBII work plans for upcoming construction activities.
• Continue to progress design for PG&E interconnection at TPS-1 towards 90% and work on long-lead material procurement in advance of construction.
• Progress TPS-2 Interconnection Design to IFC and review 90% TPS-1 Interconnection Design.
• Coordinate with PG&E on final design and construction for PG&E infrastructure.
• Coordinate with local jurisdictions to review designs.
• Continue tree pruning and removals.

3.2. Supervisory Control and Data Acquisition

SCADA is a system that monitors and controls field devices for electrification, including traction power substations (TPS), wayside power cubicles (WPC), and the OCS. SCADA will be integrated with the base operating system for Caltrain Operations and Control, which is the Rail Operations Center System. A separate control console will be established for the Power Director.

Activity This Month

• Submitted formal schedule for review and Monthly Progress Report.
• Worked on addressing comments to test procedures (ongoing).
• JPB returned comments to the contractor on four of the previously submitted test procedures.

Activity Next Month

• Prepare and deliver the Monthly Report and the Monthly Schedule Update.
• Attend project status meetings.
• Support ongoing discussions concerning RFIs.
• Complete the database and display to 100% for all locations.
• Continue development of Test Procedures and respond to comments received from JPB.

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 to manage completion of design and construction for the Tunnel 1 and Tunnel 4 Drainage and Track Rehabilitation Project. The Tunnel Drainage and Track Rehabilitation Project is funded separately from PCEP.

**Activity This Month**

• Installed drop tubes in Tunnels 1 – 4.
• Continued review of and prepared responses for submittals and RFIs.
• Met with ProVen to discuss the weekend closures schedule for Tunnel OCS work.

**Activity Next Month**

• Continue procuring and fabrication of OCS termination structures from steel shop drawings based on as-built survey of foundations and shop drawing approval.
• Review and respond to submittals, RFIs, and SSWPs as needed.
• Complete the installation of the drop tubes at all tunnels.
• Prepare and plan for the six consecutive weekend shutdowns for installation of the wires, OCS termination structures in all tunnels, and masonry at South Tunnel 4.
4.0 ELECTRIC MULTIPLE UNITS

This section reports on the progress of the Electric Multiple Units (EMU) procurement and the Centralized Equipment Maintenance and Operations Facility (CEMOF) modifications.

4.1. Electric Multiple Units

The procurement of EMUs, or trainsets, from Stadler consists of a Base Order of 96 railcars, plus an Option Order of an additional 37 railcars, for a total of 133 railcars. The cars from these two orders will be combined and delivered as 19 seven-car Trainsets. The Base Order is funded from PCEP, and Option Order funded by a Transit and Intercity Rail Capital Program (TIRCP) grant. One more Option for additional cars is available.

Activity This Month

- System Level Final Design Reviews (FDRs) continue to have open items addressed and closed. 14 of 17 FDRs conducted, three remain and scheduled for first quarter of 2020.
- First Article Inspections (FAIs) continue to be conducted and closed. 54 of 64 FAIs have been closed.
- Electrical test conducted in Salt Lake City on six cars of first trainset.
- Car production rate improved as parts and resource shortages are being addressed.
- 28 car shells have been shipped from Stadler - Switzerland and 25 are onsite in Stadler’s Salt Lake City facility.
- Waiver request submitted to FRA for relief from requirement of passenger side door emergency manual release to operate while a train is in motion. The petition for waiver is for a design that when the door emergency open is requested, the train comes to a stop, and then the doors open.
- Performed Quality Assurance (QA) audit on Stadler electrical tests for completed cars in Salt Lake City. Results satisfactory.

Activity Next Month

- Continue to close out system level FDRs and FAIs.
- Finalize plan to perform QA audits on critical USA-based sub-suppliers.
- Work with the FRA on closing out remaining open items.
- Advance high-level door plug design.
- Finalize bike car flip-up seat and barrier design.
- Re-baseline Stadler trainset delivery and testing schedule on Caltrain property.
4.2. Centralized Equipment Maintenance and Operations Facility Modifications

The CEMOF Modifications Project will provide work areas to perform maintenance on new EMUs.

Activity This Month

- Potholed additional utilities.
- Continued processing submittals, RFIs, and SSWPs.
- Shoring for the South Pit has been completed.

Activity Next Month

- Relocate ground wire.
- Pothole the Boosted Water line.
- Begin excavation of the South Pit.
- Sawcut for Storm Drain and Siphon line.
- Install fire suppression/water line at Parts Storage Warehouse.
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

- Project staff provided input and continued its participation in the BBII contractor workforce safety meetings. Project incidents continue to be reviewed with project staff to reinforce the application of recommended safety mitigation measures.
- Continued to provide input and oversight of the contractor SSWP safety provisions and ongoing safety construction oversight and inspections.
- Conducted the monthly project Safety and Security Certification and Fire/Life Safety Meetings.
- Provided project safety updates and conducted site visits of traction power systems locations (TPS-2 and PS-6) with PMOC representatives.
- Conducted a field site meeting with representatives of the Santa Clara Valley Transportation Authority (VTA) to discuss planned work adjacent to the VTA alignment.
- Investigated project incident occurrences and worked with the BBII contractor to identify incident root causes and develop safety and security mitigation measures.
- Conducted ongoing safety inspections of contractor field activities and performed pre-work site hazards assessment walks with BBII and subcontractor staff.
- Participated in weekly project coordination meetings with the contractor to review open issues and recommended action items.

Activity Next Month

- Monthly safety communication meetings continue to be scheduled for the Project Safety and Security Certification Committee, Fire/Life Safety Committee, Rail Activation Committee, and other project-related contractor and JPB safety meetings to discuss safety priorities.
- Participate in the TASI Engineering Department’s Semiannual Safety Meetings.
- Continue focus on performing site safety inspections on the OCS foundations, pole installations, potholing, Tunnel, and CEMOF work to assess safety work practices and identify additional opportunities for improvement. Conduct contractor equipment inspections as needed.
- Continue to meet with the PCEP contractors, JPB safety, and TASI to identify opportunities to further improve project safety performance and continue to reinforce lessons learned safety mitigation recommendations resulting from prior project incidents.
- Provide project safety updates at the FTA/Caltrain – PCEP Quarterly Meeting scheduled on January 22\textsuperscript{nd}.
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

- Staff meetings with BBII QA/Quality Control (QC) management representatives continue weekly.
- Continued review of BBII-generated Nonconformance Reports (NCR) and Construction Discrepancy Reports for proper discrepancy condition, cause, disposition, corrective and preventive action and verification of closure.
- Continued review and approval of Design Variance Requests for BBII and PGH Wong for QA/QC and inspection issues/concerns.
- Continued review of BBII QC Inspectors Daily Reports, Construction QC Reports and Surveillance Reports for work scope, performance of required duties, adequacy, non-conformances, test/inspection results, follow-up on unresolved issues, and preciseness.
- Continued review of BBII Material Receipt Reports, Certificates of Conformance, Certified Tests Reports, and Certificates of Analysis to ensure delivered project materials conform to specifications, and that contractually required quality and test support documents are adequate and reflect concise conditions per the purchase order requirements.
- Continued regularly scheduled design reviews and surveillances on project design packages.
- A Corrective Action Request (CAR) was written against BBII for continuing NCRs without sufficient corrective action for issues concerning BBII field personnel working to designs/drawings that don't match the latest from the designer, PGH Wong – is now closed.
- Conducted an audit of BBII Field Activities Rail Welding on second shift.
Table 6-1 below provides details on the status of audits performed through the reporting period.

Table 6-1 Quality Assurance Audit Summary

<table>
<thead>
<tr>
<th>Quality Assurance Activity</th>
<th>This Reporting Period</th>
<th>Total to Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audits Conducted</td>
<td>1</td>
<td>104</td>
</tr>
<tr>
<td>Audit Findings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audit Findings Issued</td>
<td>0</td>
<td>65</td>
</tr>
<tr>
<td>Audit Findings Open</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Audit Findings Closed</td>
<td>0</td>
<td>65</td>
</tr>
<tr>
<td>Non-Conformances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Conformances Issued</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Non-Conformances Open</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Non-Conformances Closed</td>
<td>0</td>
<td>9</td>
</tr>
</tbody>
</table>

Activity Next Month

- Conduct audits of the two RMA facilities, the QC lab for the CEMOF Contractor, PMI.
7.0 SCHEDULE

The overall schedule remains unchanged from last month. The forecasted Revenue Service Date (RSD) remains as May 2022. The program critical path runs through the manufacturing and testing of EMU trainsets.

Shown below, Table 7-1 indicates major milestone dates for the MPS.

### Table 7-1 Schedule Status

<table>
<thead>
<tr>
<th>Milestones</th>
<th>Program Plan</th>
<th>Progress Schedule (December 2019)¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival of First Vehicle in Pueblo, CO</td>
<td>N/A</td>
<td>09/01/2020</td>
</tr>
<tr>
<td>Arrival of First Vehicle at JPB (after Pueblo testing)</td>
<td>N/A</td>
<td>02/26/2021</td>
</tr>
<tr>
<td>Segment 4 Completion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interconnection from PG&amp;E Substation to Traction Power Substation (TPS)</td>
<td>N/A</td>
<td>09/30/2020²</td>
</tr>
<tr>
<td>PG&amp;E Provides Permanent Power</td>
<td>09/09/2021</td>
<td>09/09/2021</td>
</tr>
<tr>
<td>Electrification Substantial Completion</td>
<td>08/10/2020</td>
<td>01/31/2022²</td>
</tr>
<tr>
<td>Start Phased Revenue Service</td>
<td>N/A</td>
<td>02/01/2022²</td>
</tr>
<tr>
<td>RSD (w/o Risk Contingency)</td>
<td>12/09/2021</td>
<td>05/06/2022</td>
</tr>
<tr>
<td>FFGA RSD (w/ Risk Contingency)</td>
<td>08/22/2022</td>
<td>08/22/2022</td>
</tr>
</tbody>
</table>

¹ Dates may shift slightly as the update of this month’s Progress Schedule is still in process.
² See “Notable Variances” for explanation on date shift.

### Notable Variances

BBII continues to report an overall delay to substantial completion. JPB is working with BBII on the issue and is urging BBII to accelerate resolution.

The MPS has been updated this month to recognize a delay in arrival of the first trainset in Pueblo, CO due to delayed Stadler production and testing activities. The anticipated revenue service date of May 2022 is unchanged.
Items listed in Table 7-2 reflect the critical path activities/milestones for the PCEP.

### Table 7-2 Critical Path Summary

<table>
<thead>
<tr>
<th>Activity</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing, Testing &amp; Acceptance of Trainsets 1 - 14</td>
<td>08/13/2018</td>
<td>05/06/2022</td>
</tr>
<tr>
<td>RSD w/out Risk Contingency</td>
<td>05/06/2022</td>
<td>05/06/2022</td>
</tr>
<tr>
<td>FFGA RSD w/ Risk Contingency</td>
<td>08/22/2022</td>
<td>08/22/2022</td>
</tr>
</tbody>
</table>

### Schedule Hold Points

Schedule Hold Points (SHP) represent key milestones on or near a schedule’s critical path that are used as measurement points with respect to contingency drawdown. Delays to these key milestones have the potential to require a program to utilize available contingency. Table 7-3 below reflects the SHPs for the PCEP program schedule. The dates indicated reflect the planned completion dates for each SHP.

### Table 7-3 Schedule Hold Points

<table>
<thead>
<tr>
<th>Schedule Hold Point (SHP)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTA/PMOC Risk Refresh</td>
<td>08/30/2016 (A)</td>
</tr>
<tr>
<td>Begin EMU Manufacturing</td>
<td>12/04/2017 (A)</td>
</tr>
<tr>
<td>Arrival of 1st Trainset in Salt Lake City</td>
<td>02/04/2019 (A)</td>
</tr>
<tr>
<td>Arrival of 1st Trainset in Pueblo, CO</td>
<td>09/01/2020</td>
</tr>
<tr>
<td>Arrival of 1st Trainset at JPB</td>
<td>02/26/2021</td>
</tr>
<tr>
<td>Segment 4 Completion</td>
<td>02/14/2021</td>
</tr>
<tr>
<td>Conditional Acceptance of 1st Trainset</td>
<td>04/09/2021</td>
</tr>
<tr>
<td>System Electrified</td>
<td>01/31/2022</td>
</tr>
<tr>
<td>Begin Phased Revenue Service</td>
<td>02/01/2022</td>
</tr>
<tr>
<td>Conditional Acceptance of 14th Trainset</td>
<td>05/06/2022</td>
</tr>
<tr>
<td>FFGA RSD w/ Risk Contingency</td>
<td>08/22/2022</td>
</tr>
</tbody>
</table>

Note: "(A)" denotes an actual completion
8.0 BUDGET AND EXPENDITURES

The summary of overall budget and expenditure status for the PCEP and Third Party Improvements is shown in the following tables. Table 8-1 reflects the Electrification budget, Table 8-2 the EMU budget, Table 8-3 the overall PCEP budget, and Table 8-4 Third Party Improvements budget. Table 8-5 summarizes the budget transfers of contingency completed this month.

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

<table>
<thead>
<tr>
<th>Description of Work</th>
<th>Budget (A)</th>
<th>Current Budget (B)</th>
<th>Cost This Month (C)</th>
<th>Cost To Date (D)</th>
<th>Estimate To Complete (E)</th>
<th>Estimate At Completion (F) = (D) + (E)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ELECTRIFICATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrification</td>
<td>$696,610,558</td>
<td>$723,796,465</td>
<td>$6,942,184</td>
<td>$363,674,691</td>
<td>$360,121,774</td>
<td>$723,796,465</td>
</tr>
<tr>
<td>SCADA</td>
<td>$0</td>
<td>$3,446,917</td>
<td>$0</td>
<td>$1,934,371</td>
<td>$1,512,546</td>
<td>$3,446,917</td>
</tr>
<tr>
<td>Tunnel Modifications</td>
<td>$11,029,649</td>
<td>$42,624,610</td>
<td>$4,438,390</td>
<td>$29,071,405</td>
<td>$13,553,205</td>
<td>$42,624,610</td>
</tr>
<tr>
<td>Real Estate</td>
<td>$28,503,369</td>
<td>$28,503,369</td>
<td>$67,858</td>
<td>$20,743,460</td>
<td>$7,759,909</td>
<td>$28,503,369</td>
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<tr>
<td>Private Utilities</td>
<td>$63,515,298</td>
<td>$92,451,380</td>
<td>$2,703,826</td>
<td>$73,830,895</td>
<td>$18,620,486</td>
<td>$92,451,380</td>
</tr>
<tr>
<td>Management Oversight</td>
<td>$141,506,257</td>
<td>$144,957,684</td>
<td>$1,914,132</td>
<td>$129,170,035</td>
<td>$15,787,649</td>
<td>$144,957,684</td>
</tr>
<tr>
<td>Executive Management</td>
<td>$7,452,866</td>
<td>$6,214,226</td>
<td>$143,386</td>
<td>$7,695,329</td>
<td>($1,481,102)</td>
<td>$6,214,226</td>
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<tr>
<td>Planning</td>
<td>$7,281,997</td>
<td>$7,281,997</td>
<td>$11,517</td>
<td>$5,716,584</td>
<td>$1,565,413</td>
<td>$7,281,997</td>
</tr>
<tr>
<td>Community Relations</td>
<td>$2,789,663</td>
<td>$2,789,663</td>
<td>$14,301</td>
<td>$1,528,633</td>
<td>$1,261,030</td>
<td>$2,789,663</td>
</tr>
<tr>
<td>Safety &amp; Security</td>
<td>$2,421,783</td>
<td>$3,691,387</td>
<td>$87,907</td>
<td>$2,932,588</td>
<td>$758,799</td>
<td>$3,691,387</td>
</tr>
<tr>
<td>Project Management Services</td>
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<td>$19,807,994</td>
<td>$74,085</td>
<td>$12,126,174</td>
<td>$7,681,820</td>
<td>$19,807,994</td>
</tr>
<tr>
<td>Engineering &amp; Construction</td>
<td>$11,805,793</td>
<td>$11,805,793</td>
<td>$246,466</td>
<td>$9,495,094</td>
<td>$2,310,700</td>
<td>$11,805,793</td>
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<tr>
<td>Electrification Eng &amp; Mgmt</td>
<td>$50,461,707</td>
<td>$50,461,707</td>
<td>$931,296</td>
<td>$45,411,627</td>
<td>$5,050,080</td>
<td>$50,461,707</td>
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<tr>
<td>Construction Management</td>
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<td>$2,790,608</td>
<td>$169,158</td>
<td>$1,853,022</td>
<td>$937,587</td>
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<td>IT Support</td>
<td>$312,080</td>
<td>$407,170</td>
<td>$0</td>
<td>$407,170</td>
<td>$0</td>
<td>$407,170</td>
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<tr>
<td>Operations Support</td>
<td>$1,445,867</td>
<td>$1,980,632</td>
<td>$37,937</td>
<td>$2,283,909</td>
<td>($303,277)</td>
<td>$1,980,632</td>
</tr>
<tr>
<td>General Support</td>
<td>$4,166,577</td>
<td>$4,166,577</td>
<td>$106,755</td>
<td>$5,180,740</td>
<td>($1,014,163)</td>
<td>$4,166,577</td>
</tr>
<tr>
<td>Budget / Grants / Finance</td>
<td>$1,229,345</td>
<td>$1,229,345</td>
<td>$2,021</td>
<td>$1,347,714</td>
<td>($118,370)</td>
<td>$1,229,345</td>
</tr>
<tr>
<td>Legal</td>
<td>$2,445,646</td>
<td>$2,445,646</td>
<td>$24,362</td>
<td>$4,469,053</td>
<td>($2,023,407)</td>
<td>$2,445,646</td>
</tr>
<tr>
<td>Other Direct Costs</td>
<td>$5,177,060</td>
<td>$5,177,060</td>
<td>$62,942</td>
<td>$4,014,520</td>
<td>$1,162,540</td>
<td>$5,177,060</td>
</tr>
<tr>
<td>Prior Costs 2002 - 2013</td>
<td>$24,707,878</td>
<td>$24,707,878</td>
<td>$0</td>
<td>$24,707,878</td>
<td>$0</td>
<td>$24,707,878</td>
</tr>
<tr>
<td>TASI Support</td>
<td>$55,275,084</td>
<td>$55,275,084</td>
<td>$1,307,308</td>
<td>$34,165,290</td>
<td>$21,109,794</td>
<td>$55,275,084</td>
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<tr>
<td>Insurance</td>
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<td>$4,543,588</td>
<td>$0</td>
<td>$4,543,588</td>
<td>$0</td>
<td>$4,543,588</td>
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<td>Environmental Mitigations</td>
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<td>$14,972,644</td>
<td>$0</td>
<td>$690,411</td>
<td>$14,282,234</td>
<td>$14,972,644</td>
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<tr>
<td>Required Projects</td>
<td>$17,337,387</td>
<td>$14,253,335</td>
<td>$6,935</td>
<td>$828,930</td>
<td>$13,424,405</td>
<td>$14,253,335</td>
</tr>
<tr>
<td>Maintenance Training</td>
<td>$1,021,808</td>
<td>$1,021,808</td>
<td>$0</td>
<td>$0</td>
<td>$1,021,808</td>
<td>$1,021,808</td>
</tr>
<tr>
<td>Finance Charges</td>
<td>$5,056,838</td>
<td>$6,137,156</td>
<td>$96,100</td>
<td>$3,766,544</td>
<td>$2,370,612</td>
<td>$6,137,156</td>
</tr>
<tr>
<td>Contingency</td>
<td>$276,970,649</td>
<td>$184,141,167</td>
<td>N/A</td>
<td>$106,577,308</td>
<td>$106,577,308</td>
<td>$276,970,649</td>
</tr>
<tr>
<td>Forecasted Costs and Changes</td>
<td>$0</td>
<td>$0</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>ELECTRIFICATION SUBTOTAL</strong></td>
<td><strong>$1,316,125,208</strong></td>
<td><strong>$1,316,125,208</strong></td>
<td><strong>$17,476,734</strong></td>
<td><strong>$662,419,619</strong></td>
<td><strong>$653,705,589</strong></td>
<td><strong>$1,316,125,208</strong></td>
</tr>
</tbody>
</table>

Notes regarding tables above:

1. Column B “Current Budget” includes executed change orders and awarded contracts.
2. Column C “Cost This Month” represents the cost of work performed this month.
3. Column D “Cost To Date” includes actuals (amount paid) and accruals (amount of work performed) to date.
4. Cost To Date for “Electrification” includes 5% for Contractor’s retention until authorization of retention release.
5. The agency labor is actual through November 2019 and accrued for December 2019.
## Table 8-2 EMU Budget & Expenditure Status

<table>
<thead>
<tr>
<th>Description of Work</th>
<th>Budget</th>
<th>Current Budget</th>
<th>Cost This Month</th>
<th>Cost To Date</th>
<th>Estimate To Complete</th>
<th>Estimate At Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(A)</td>
<td>(B)(^1)</td>
<td>(C)(^2)</td>
<td>(D)(^3)</td>
<td>(E)</td>
<td>(F) = (D) + (E)</td>
</tr>
<tr>
<td>EMU</td>
<td>$550,899,459</td>
<td>$555,034,909</td>
<td>$7,016,569</td>
<td>$152,219,402</td>
<td>$402,815,507</td>
<td>$555,034,909</td>
</tr>
<tr>
<td>CEMOF Modifications</td>
<td>$1,344,000</td>
<td>$6,550,777</td>
<td>$477,534</td>
<td>$1,727,973</td>
<td>$4,822,804</td>
<td>$6,550,777</td>
</tr>
<tr>
<td>Management Oversight (x)</td>
<td>$64,139,103</td>
<td>$63,113,984</td>
<td>$485,829</td>
<td>$40,497,524</td>
<td>$22,616,459</td>
<td>$63,113,984</td>
</tr>
<tr>
<td>Executive Management</td>
<td>$5,022,302</td>
<td>$4,263,136</td>
<td>$82,641</td>
<td>$4,769,996</td>
<td>($506,860)</td>
<td>$4,263,136</td>
</tr>
<tr>
<td>Community Relations</td>
<td>$1,685,614</td>
<td>$1,285,614</td>
<td>$8,779</td>
<td>$623,073</td>
<td>$662,541</td>
<td>$1,285,614</td>
</tr>
<tr>
<td>Safety &amp; Security</td>
<td>$556,067</td>
<td>$765,296</td>
<td>$6,990</td>
<td>$504,234</td>
<td>$261,062</td>
<td>$765,296</td>
</tr>
<tr>
<td>Project Mgmt Services</td>
<td>$13,275,280</td>
<td>$13,275,280</td>
<td>$74,197</td>
<td>$7,865,078</td>
<td>$5,410,202</td>
<td>$13,275,280</td>
</tr>
<tr>
<td>Eng &amp; Construction</td>
<td>$89,113</td>
<td>$89,113</td>
<td>$0</td>
<td>$23,817</td>
<td>$65,296</td>
<td>$89,113</td>
</tr>
<tr>
<td>EMU Eng &amp; Mgmt</td>
<td>$32,082,556</td>
<td>$30,581,014</td>
<td>$168,298</td>
<td>$18,650,065</td>
<td>$11,930,948</td>
<td>$30,581,014</td>
</tr>
<tr>
<td>Construction Management</td>
<td>$0</td>
<td>$1,501,543</td>
<td>$42,322</td>
<td>$367,859</td>
<td>$1,133,684</td>
<td>$1,501,543</td>
</tr>
<tr>
<td>IT Support</td>
<td>$1,207,500</td>
<td>$1,207,500</td>
<td>(1,013)</td>
<td>$1,221,462</td>
<td>($13,962)</td>
<td>$1,207,500</td>
</tr>
<tr>
<td>Operations Support</td>
<td>$2,740,000</td>
<td>$2,789,493</td>
<td>$12,683</td>
<td>$66,373</td>
<td>$2,723,120</td>
<td>$2,789,493</td>
</tr>
<tr>
<td>General Support</td>
<td>$712,123</td>
<td>$712,123</td>
<td>$1,155</td>
<td>$894,530</td>
<td>($182,406)</td>
<td>$712,123</td>
</tr>
<tr>
<td>Legal</td>
<td>$38,562,962</td>
<td>$28,410,596</td>
<td>N/A</td>
<td>$29,473,057</td>
<td>$29,473,057</td>
<td>N/A</td>
</tr>
<tr>
<td>Other Direct Costs</td>
<td>$4,500,000</td>
<td>$4,427,821</td>
<td>$0</td>
<td>$3,889,541</td>
<td>$4,427,821</td>
<td>$3,889,541</td>
</tr>
<tr>
<td>TASI Support</td>
<td>$1,941,800</td>
<td>$3,761,482</td>
<td>$58,900</td>
<td>$2,308,527</td>
<td>$1,452,955</td>
<td>$3,761,482</td>
</tr>
<tr>
<td>Required Projects</td>
<td>$38,562,962</td>
<td>$28,410,596</td>
<td>N/A</td>
<td>$29,473,057</td>
<td>$29,473,057</td>
<td>N/A</td>
</tr>
<tr>
<td>Insurance</td>
<td>$4,500,000</td>
<td>$4,427,821</td>
<td>$0</td>
<td>$3,889,541</td>
<td>$4,427,821</td>
<td>$3,889,541</td>
</tr>
<tr>
<td>Finance Charges</td>
<td>$1,941,800</td>
<td>$3,761,482</td>
<td>$58,900</td>
<td>$2,308,527</td>
<td>$1,452,955</td>
<td>$3,761,482</td>
</tr>
<tr>
<td>Contingency</td>
<td>$38,562,962</td>
<td>$28,410,596</td>
<td>N/A</td>
<td>$29,473,057</td>
<td>$29,473,057</td>
<td>N/A</td>
</tr>
<tr>
<td>Forecasted Costs and Changes</td>
<td>$0</td>
<td>$0</td>
<td>N/A</td>
<td>N/A</td>
<td>($1,062,461)</td>
<td>($1,062,461)</td>
</tr>
<tr>
<td><strong>EMU SUBTOTAL</strong></td>
<td><strong>$664,127,325</strong></td>
<td><strong>$664,127,325</strong></td>
<td><strong>$8,089,778</strong></td>
<td><strong>$197,396,342</strong></td>
<td><strong>$466,730,983</strong></td>
<td><strong>$664,127,325</strong></td>
</tr>
</tbody>
</table>

Notes regarding tables above:
1. Column B "Current Budget" includes executed change orders and awarded contracts.
2. Column C "Cost This Month" represents the cost of work performed this month.
3. Column D "Cost To Date" includes actuals (amount paid) and accruals (amount of work performed) to date.
4. The agency labor is actual through November and accrued for December 2019.

## Table 8-3 PCEP Budget & Expenditure Status

<table>
<thead>
<tr>
<th>Description of Work</th>
<th>Budget</th>
<th>Current Budget</th>
<th>Cost This Month</th>
<th>Cost To Date</th>
<th>Estimate To Complete</th>
<th>Estimate At Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(A)</td>
<td>(B)(^1)</td>
<td>(C)(^2)</td>
<td>(D)(^3)</td>
<td>(E)</td>
<td>(F) = (D) + (E)</td>
</tr>
<tr>
<td>Electrification Subtotal</td>
<td>$1,316,125,208</td>
<td>$1,316,125,208</td>
<td>$17,476,734</td>
<td>$662,419,619</td>
<td>$653,705,589</td>
<td>$1,316,125,208</td>
</tr>
<tr>
<td>EMU Subtotal</td>
<td>$664,127,325</td>
<td>$664,127,325</td>
<td>$6,089,778</td>
<td>$197,396,342</td>
<td>$466,730,983</td>
<td>$664,127,325</td>
</tr>
<tr>
<td><strong>PCEP TOTAL</strong></td>
<td><strong>$1,980,252,533</strong></td>
<td><strong>$1,980,252,533</strong></td>
<td><strong>$25,566,512</strong></td>
<td><strong>$859,815,961</strong></td>
<td><strong>$1,120,436,572</strong></td>
<td><strong>$1,980,252,533</strong></td>
</tr>
</tbody>
</table>

Notes regarding tables above:
1. Column B "Current Budget" includes executed change orders and awarded contracts.
2. Column C "Cost This Month" represents the cost of work performed this month.
3. Column D "Cost To Date" includes actuals (amount paid) and accruals (amount of work performed) to date.
## Table 8-4 Third Party Improvements/CNPA Budget & Expenditure Status

<table>
<thead>
<tr>
<th>Description of Work</th>
<th>Budget</th>
<th>Current Budget</th>
<th>Cost This Month</th>
<th>Cost To Date</th>
<th>Estimate To Complete</th>
<th>Estimate At Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHSRA Early Pole Relocation</td>
<td>$1,000,000</td>
<td>$1,000,000</td>
<td>$0</td>
<td>$731,526</td>
<td>$268,474</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>PS-3 Relocation (Design)</td>
<td>$500,000</td>
<td>$500,000</td>
<td>$0</td>
<td>$150,000</td>
<td>$350,000</td>
<td>$500,000</td>
</tr>
<tr>
<td>TPSS-2 VTA/PCEP Pole Relocation (Design)</td>
<td>$110,000</td>
<td>$110,000</td>
<td>$0</td>
<td>$93,500</td>
<td>$16,500</td>
<td>$110,000</td>
</tr>
<tr>
<td>TPSS-2 VTA/PCEP Pole Height (Redesign)</td>
<td>$31,000</td>
<td>$31,000</td>
<td>$0</td>
<td>$0</td>
<td>$31,000</td>
<td>$31,000</td>
</tr>
<tr>
<td>EMU Option Cars</td>
<td>$172,800,047</td>
<td>$172,800,047</td>
<td>$0</td>
<td>$52,359,370</td>
<td>$120,440,677</td>
<td>$172,800,047</td>
</tr>
<tr>
<td>Add Flip-Up Seats into Bike Cars</td>
<td>$1,961,350</td>
<td>$1,961,350</td>
<td>$0</td>
<td>$0</td>
<td>$1,961,350</td>
<td>$1,961,350</td>
</tr>
<tr>
<td><strong>CNPA TOTAL</strong></td>
<td><strong>$176,402,397</strong></td>
<td><strong>$176,402,397</strong></td>
<td><strong>$0</strong></td>
<td><strong>$53,334,396</strong></td>
<td><strong>$123,068,001</strong></td>
<td><strong>$176,402,397</strong></td>
</tr>
</tbody>
</table>

Notes regarding tables above:

1. Column B “Current Budget” includes executed change orders and awarded contracts.
2. Column C “Cost This Month” represents the cost of work paid this month.
3. Column D “Cost To Date” includes actuals (amount paid) to date.

Table 8-4 shows improvements outside of the scope of PCEP that are funded with non-PCEP funds. These improvements are implemented through the PCEP contracts. In FTA terminology, these efforts are categorized as Concurrent Non-Project Activities (CNPA).

- CHSRA Early Pole Relocation: Relocation of 196 OCS poles as part of PCEP. Implementing these pole relocations minimizes future cost and construction impacts. This scope is funded by the CHSRA.
- PS-3 Relocation (Design): Relocate PS-3 (Burlingame) as part of PCEP to avoid a future conflict with the Broadway Grade Separation Project (BGSP). This scope is funded by the BGSP.
- TPSS-2 VTA/PCEP Pole Relocation and Height (Redesign): Design changes due to the relocation of VTA/BART Pole at TPSS-2 location and pole height redesign for live line clearances. This scope is funded by the VTA.
- EMU Option Cars: Exercise Stadler Contract Option for 37 additional EMUs. This scope is funded with a combination of TIRCP and matching local funds.
- Add Flip-Up Seats into Bike Cars: Stadler contract change order to add four additional flip-up seats in each of the two unpowered (bike) cars per trainset (eight total per trainset). This scope is funded by Caltrain outside of the PCEP.
Table 8-5 Budget Transfers of Contingency

<table>
<thead>
<tr>
<th>Transfer</th>
<th>Description</th>
<th>Contingency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ELECTRIFICATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BBI-053-CCO-065A</td>
<td>Foundation Inefficiencies S2WA5</td>
<td>$401,501</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ELECTRIFICATION SUBTOTAL</strong></td>
</tr>
<tr>
<td><strong>EMU</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USI-BT-016</td>
<td>Rail Road Liability Protection (RRLP) for CEMOF</td>
<td>$38,263</td>
</tr>
<tr>
<td>TASI-BT-022</td>
<td>TASI Support for AEM-7 Locomotives</td>
<td>$49,493</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>EMU SUBTOTAL</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>PCEP TOTAL</strong></td>
</tr>
</tbody>
</table>

Notes regarding tables above:

1. Budget amount transferred from project contingency. A negative amount represents a credit to contingency.

Table 8-5 shows budget transfers of project contingency implemented during the current monthly reporting period. This table includes contingency transfers for both executed contract change orders as covered under Section 9.0 and uses of contingency for Program budget line items outside the five PCEP contracts.

Appendix D includes costs broken down by Standard Cost Code (SCC) format. This format is required for reporting of costs to the FTA. The overall project total in the SCC format is lower than the project costs in table 8-3. This is due to the exclusion of costs incurred prior to the project entering the Project Development phase.
9.0 CHANGE MANAGEMENT

The change management process establishes a formal administrative work process associated with the initiation, documentation, coordination, review, approval and implementation of changes that occur during the design, construction or manufacturing of the PCEP. The change management process accounts for impacts of the changes and ensures prudent use of contingency.

Currently the PCEP contracts are BBII, CEMOF, Stadler, SCADA, Tunnel Modifications, and Amtrak.

A log of all executed change orders can be found in Appendix E.

**Executed Contract Change Orders (CCO) This Month**

**Electrification Contract**

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/11/19</td>
<td>BBI-053-CCO-065A</td>
<td>Foundation Inefficiencies S2WA5</td>
<td>$401,501</td>
</tr>
</tbody>
</table>

Total $401,501

(When indicated) Change approved by the Board of Directors – not counted against the Executive Director’s Change Order Authority.

**EMU Contract**

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td>None</td>
<td>$0</td>
</tr>
</tbody>
</table>

Total $0

(When indicated) Change approved by the Board of Directors – not counted against the Executive Director’s Change Order Authority.

**CEMOF Contract**

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td>None</td>
<td>$0</td>
</tr>
</tbody>
</table>

Total $0

(When indicated) Change approved by the Board of Directors – not counted against the Executive Director’s Change Order Authority.

**SCADA Contract**

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td>None</td>
<td>$0</td>
</tr>
</tbody>
</table>

Total $0

(When indicated) Change approved by the Board of Directors – not counted against the Executive Director’s Change Order Authority.
### Tunnel Modification Contract

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
<td>$0</td>
</tr>
</tbody>
</table>

10% x $38,477,777 = $3,847,778

### Amtrak AEM-7 Contract

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
<td>$0</td>
</tr>
</tbody>
</table>

Up to $150,000

Notes:

1. When the threshold of 75% is reached, staff may return to the Board to request additional authority.
10.0 FUNDING

Figure 10-1 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, FTA awarded amendments to include $67 million in Fiscal Year 2019 Section 5307 formula funds, and the next $100 million in Core Capacity funds, in the existing grants for the project.

![Figure 10-1 Funding Plan](image)

The funding plan is summarized in the following table:

<table>
<thead>
<tr>
<th>Fund Source</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTA Core Capacity</td>
<td>$647,000,000</td>
<td>32.67%</td>
</tr>
<tr>
<td>FTA Section 5307 (FMI only)*</td>
<td>$315,000,000</td>
<td>15.91%</td>
</tr>
<tr>
<td>FTA Section 5307 (Environmental / Pre Development only)</td>
<td>$15,675,000</td>
<td>0.79%</td>
</tr>
<tr>
<td>Prop 1A</td>
<td>$600,000,000</td>
<td>30.30%</td>
</tr>
<tr>
<td>High Speed Rail Cap and Trade</td>
<td>$113,000,000</td>
<td>5.71%</td>
</tr>
<tr>
<td>Transit &amp; Intercity Rail Capital Program</td>
<td>$20,000,000</td>
<td>1.01%</td>
</tr>
<tr>
<td>Prop 1B (Public Transportation Modernization &amp; Improvement Account)</td>
<td>$8,000,000</td>
<td>0.40%</td>
</tr>
<tr>
<td>Bridge Toll Funds (RM1/RM2)</td>
<td>$39,435,000</td>
<td>1.99%</td>
</tr>
<tr>
<td>Carl Moyer</td>
<td>$20,000,000</td>
<td>1.01%</td>
</tr>
<tr>
<td>SFCTA/SFMTA**</td>
<td>$41,382,177</td>
<td>2.09%</td>
</tr>
<tr>
<td>SMCTA Measure A</td>
<td>$41,382,177</td>
<td>2.09%</td>
</tr>
<tr>
<td>VTA Measure A</td>
<td>$41,382,177</td>
<td>2.09%</td>
</tr>
<tr>
<td>Santa Clara (VTA) 7-Party MOU Contribution</td>
<td>$20,000,000</td>
<td>1.01%</td>
</tr>
<tr>
<td>San Francisco 7-Party MOU Contribution</td>
<td>$20,000,000</td>
<td>1.01%</td>
</tr>
<tr>
<td>San Mateo (SMCTA) 7-Party MOU Contribution</td>
<td>$20,000,000</td>
<td>1.01%</td>
</tr>
<tr>
<td>Caltrain Low Carbon Transit Operations Cap and Trade</td>
<td>$9,000,000</td>
<td>0.45%</td>
</tr>
<tr>
<td>Prior Local Contribution</td>
<td>$9,000,000</td>
<td>0.45%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,980,252,533</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- *Includes necessary fund transfer with SMCTA
- **Includes $4M (CMAP) Transfer considered part of SF local contribution
11.0 **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 is 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 risks for the project (see Appendix F for the complete Risk Table):

1. Contractor incorrect sequencing of early utility locations, preliminary design, final design, and foundation construction may result in inefficiencies in construction, redesign, and reduced production rates.
2. Extent of differing site conditions and delays in resolving differing site conditions result in delays to the completion of Electrification contract and increases program costs.
3. The contractor may not complete and install signal design including CWT modifications within budget and schedule.
4. Track access does not comply with contractor-stipulated work windows.
5. Major program elements may not be successfully integrated with existing operations and infrastructure in advance of revenue service.
6. Potential that modifications to the PTC database and signal software are not completed in time for cutover and testing.
7. Additional property acquisition is necessitated by change in design.
8. Contractor generates hazardous materials that necessitate proper removal and disposal in excess of contract allowances and expectations.
9. Rejection of Design Variance Request (DVR) for Auto Transformer Feeder (ATF) and static wires results in cost and schedule impacts to PCEP.
10. Changes to PTC implementation schedule could delay completion of electrification work.

**Activity This Month**

- Updated 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.
- Updated risk retirement dates 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 Risk Management team attended Project Delivery, Electrification, and Systems Integration meetings to monitor developments associated with risks and to identify new risks.

Figures 11-1 and 11-2 show the risks identified for the program. Risks are categorized as top risk, upcoming risk, and all other risks. The categories are based on a rating scale composed of schedule and cost factors. 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. All other risks are risks not falling into other categories.

**Figure 11-1 Monthly Status of Risks**

![Number of Risks by Category](image)

- **Top Risks**: 10
- **Upcoming Risks**: 19
- **All Other Risks**: 67

**Total Number of Active Risks = 96**
Figure 11-2 Risk Classification

<table>
<thead>
<tr>
<th>Category &amp; Owner</th>
<th>Number of Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>10</td>
</tr>
<tr>
<td>JPB</td>
<td>19</td>
</tr>
<tr>
<td>EMU</td>
<td>7</td>
</tr>
<tr>
<td>D/B</td>
<td>8</td>
</tr>
<tr>
<td>Top Risks</td>
<td>67</td>
</tr>
<tr>
<td>Upcoming Risks</td>
<td>42</td>
</tr>
<tr>
<td>All Other Risks</td>
<td>0</td>
</tr>
</tbody>
</table>

Total Number of Active Risks = 96

Activity Next Month

- Conduct weekly monitoring of risk mitigation actions and continue publishing risk register.
- Update risk descriptions, effects, mitigations and retirement dates based on weekly monitoring and attendance at key project meetings.
- Convene Risk Assessment Committee meeting.
- Finalize risk analysis report for cost and schedule impacts based on updated risk register with Project Management and PMOC.
12.0 ENVIRONMENTAL

12.1. Permits

The PCEP has obtained the required 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 (SFWQCB), the California Department of Fish and Wildlife, and the San Francisco Bay Conservation Development Commission.

Activity This Month

- None

Activity Next Month

- None

12.2. 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 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 status of each mitigation measure in the MMRP is included in Appendix G.

Activity This Month

- Environmental compliance monitors were present during project activities (OCS pole foundation installation, potholing for utility location, duct bank and manhole installation, tree trimming/removal, conduit installation, signal case installation, grading, abandoned signal cable removal, traction power station work installation, replacement, and/or removal of existing power/light pole, etc.) occurring in areas that required 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.

- Noise and vibration monitoring also occurred during project activities, and non-hazardous soil was removed from the right of way (ROW).

- Environmentally Sensitive Area (ESA) delineation (staking and/or fencing) occurred to delineate jurisdictional waterways and other potentially sensitive areas that should be avoided during upcoming construction activities. Wildlife exclusion fencing installation and monitoring occurred adjacent to portions of the alignment designated for wildlife exclusion fencing.
Best management practices (BMP) installation (e.g., silt fencing, straw wattles, soil covers) occurred at equipment staging areas and other work areas throughout the alignment in accordance with the project-specific Stormwater Pollution Prevention Plan (SWPPP). An assessment of two existing subsurface pipes by a certified Asbestos Consultant occurred during this reporting period, and a specification describing the methods for removal and disposal is currently in progress.

- A certified Asbestos Consultant finalized specifications describing the removal, disposal, and monitoring methods for two (2) existing subsurface pipes within the right of way.

**Activity Next Month**

- Environmental compliance monitors will continue to monitor project activities (OCS pole foundation installation, pot holing for utility location, duct bank and manhole installation, tree trimming/removal, conduit installation, case installation, traction power station drainage work, grading, clear and grub, soils removal, etc.) occurring in areas that require environmental compliance monitoring in an effort to minimize potential impacts on sensitive environmental resources in accordance with the MMRP.

- Noise and vibration monitoring of project activities will continue to occur and non-hazardous soil will continue to be removed.

- Biological surveyors will continue to conduct pre-construction surveys for sensitive wildlife species ahead of project activities. Surveys for a sensitive avian species will commence for the 2020 breeding season at previously identified potential habitat locations.

- BMPs installation will continue in accordance with the project-specific SWPPP, and ESA staking and fencing will continue to occur, to delineate jurisdictional waterways, and other potentially sensitive areas, that should be avoided during upcoming project activities.

- Wildlife exclusion fencing will continue to be installed prior to upcoming construction activities adjacent to potentially suitable habitat for sensitive wildlife species.
13.0 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

- Worked with all utilities on review of overhead utility line relocations based on the current design.
- Coordinated with individual utility companies on relocation plans and schedule for incorporation with Master Program Schedule.
- Coordinated work with communications utilities on review of relocation design.
- Continued to coordinate relocation work for SVP and Palo Alto Power facilities.
- Continued to coordinate relocation by communication cable owners such as AT&T and Comcast.
- Conducted utility coordination meeting to discuss overall status and areas of potential concern from the utilities.

Activity Next Month

- Coordinate with individual utility owners on the next steps of relocations, including support of any required design information.
- Update the relocation schedule as information becomes available from the utility owners.
- Continue to review relocation design SVP, Palo Alto Power, and communications companies and coordinate relocation field work.
- Continue communication relocations in all Segments.
- Continue SVP and Palo Alto Power relocations in Segment 3.
14.0 REAL ESTATE

The PCEP requires the acquisition of a limited amount of real estate. In general, Caltrain uses existing Right of Way (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 (ESZ) (easements). There are two larger full acquisition areas required for wayside facilitates. The PCEP Real Estate 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.

Of the parcels identified at the beginning of the project, there remain only five owners from whom the agency requires possession; of which two are in redesign.

The Real Estate team’s current focus is working to identify new parcels and acquire them in conjunction with the project schedule.

- Staff has defined a process to ensure that BBII conveys new needs as soon as possible.
  - BBII must justify and JPB must approve all new parcels.
- Design needs to progress to enable BBII to identify exact acquisition areas.
- Staff is conducting pre-acquisition activities as appropriate.
- JPB has approved four new parcels to date.

Activity This Month

- Negotiations with Willowbend Apartments are ongoing.
- Staff reviewing potential new pole locations and providing feedback to the design team.
- Preparation of First Written Offer package for KB Homes. Reviewed ESZ requirements for KB Homes to confirm acquisitions.
- Reviewing parcel acquisition options for Marchese parcel with Santa Clara Valley Water District.
- Working with City of San Jose and Diridon Hospitality to finalize design. Met with Diridon Hospitality and we are moving forward with redesign. Held follow-up conference calls and emails with Diridon Hospitality regarding design conflicts.
- Actively working with SVP to de-energize and install foundations.
- Staff is actively working with PG&E and VTA to gain access to their properties for potholing. Submitted acquisition information package/plan to PG&E for their review and working with VTA to develop safety procedures for working near each agency’s operating ROW.
- Finalizing appraisal map for Britannia Gateway, which requires PG&E approval.

Activity Next Month

- Continue to negotiate for all open parcels.
• Review the acquisition of the Marchese parcel.
• Continue discussions with PG&E to finalize possession date.
• Confirm new acquisition associated with the Stephens parcel. The Design Builder identified a potential modified acquisition.
• JPB Safety to coordinate with VTA Safety to comply with their permitting requirements.
• Confirm ROW acquisitions with City of San Jose.
• Finalize design for Diridon Hospitality.
• Work with City of San Jose to resolve underlying street interests.
• Continue to work with Segment 3 and 4 owners for early access to pothole.
• Make offers on the parcel for which appraisals have been completed.
• Actively participate in Foundation/Pothole and Gannett Fleming weekly meetings.
• Continue to work with project team to identify and analyze new potential parcels.
• Map newly identified parcels.
15.0 THIRD PARTY AGREEMENTS

Third-party coordination is necessary for work impacting public infrastructure, utilities, ROW acquisitions, and others. Table 15-1 below outlines the status of necessary agreements for the PCEP.

<table>
<thead>
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<th>Type</th>
<th>Agreement</th>
<th>Third-Party</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governmental Jurisdictions</td>
<td>Construction &amp; Maintenance¹</td>
<td>City &amp; County of San Francisco</td>
<td>Executed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>City of Brisbane</td>
<td>Executed</td>
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<tr>
<td></td>
<td></td>
<td>City of South San Francisco</td>
<td>Executed</td>
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<td></td>
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<td>City of San Bruno</td>
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<td>City of Millbrae</td>
<td>Executed</td>
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<td>City of Burlingame</td>
<td>Executed</td>
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<td>City of San Mateo</td>
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<td></td>
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<td>City of Belmont</td>
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<td>City of San Carlos</td>
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<td></td>
<td>City of Redwood City</td>
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<td>City of Atherton</td>
<td>In Process</td>
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<td></td>
<td></td>
<td>County of San Mateo</td>
<td>Executed</td>
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<td></td>
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<td>City of Menlo Park</td>
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<td>City of Palo Alto</td>
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<td>City of Mountain View</td>
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<td>City of Santa Clara</td>
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<td>County of Santa Clara</td>
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<td></td>
<td>City of San Jose</td>
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<tr>
<td></td>
<td>Condemnation Authority</td>
<td>San Francisco</td>
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<td>San Mateo</td>
<td>Executed</td>
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<td></td>
<td></td>
<td>Santa Clara</td>
<td>Executed</td>
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<tr>
<td>Utilities</td>
<td>Infrastructure</td>
<td>PG&amp;E</td>
<td>Executed</td>
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<td>Operating Rules</td>
<td>CPUC</td>
<td>Executed</td>
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<td>Transportation &amp; Railroad</td>
<td>Construction &amp; Maintenance</td>
<td>Bay Area Rapid Transit</td>
<td>Executed²</td>
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<tr>
<td></td>
<td>Construction &amp; Maintenance</td>
<td>California Dept. of Transportation (Caltrans)</td>
<td>Not needed³</td>
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<tr>
<td></td>
<td>Trackage Rights</td>
<td>UPRR</td>
<td>Executed²</td>
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</tbody>
</table>

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 Utilizing existing agreements.

³ Caltrans Peer Process utilized. Formal agreement not needed.
16.0 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 BBII’s effectiveness in implementing its Public Involvement Program. The following PCEP-related external affairs meetings took place this month:

Presentations/Meetings

- None

Third Party/Stakeholder Actions

- Brisbane Bridge Attachments – Design Change Notice Drawings
17.0 DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION AND LABOR STATISTICS

BBII proposed that 5.2% ($36,223,749) of the total DB base contract value ($696,610,558) would be subcontracted to DBEs.

Activity This Month

As expressed in Figure 17-1 below, to date:

- $32,423,110 has been paid to DBE subcontractors.
- 4.7% has been achieved.

Activity Next Month

In order to reach the 5.2% DBE participation goal, BBII has proposed the following key actions:

“In the month of January, 2019, we continue to anticipate increasing our DBE commitments to firms who we are currently negotiating pricing on proposed work or Professional Services Agreements. We are optimistic about the prospect of making future awards to DBE firms. We also anticipate that the existing project work will increase resulting in expanded work for current DBE subcontractors.”
18.0 PROCUREMENT

Invitation for Bids (IFB)/Request for Quotes (RFQ)/ Request for Proposals (RFP) Issued this Month:

- None

Bids, Quotes, Proposals in Response to IFB/RFQ/RFP Received this Month:

- None

Contract Awards this Month:

- None

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

- Multiple WDs & POs issued to support the program needs

In Process IFB/RFQ/RFP/Contract Amendments:

- None

Upcoming Contract Awards/Contract Amendments:

- Amendment to Memorandum of Understanding (MOU) – Bus Bridge Services for Tunnel Modifications Project – SamTrans
- Letter to Exercise Option Term – LTK – 14-PCJPB-P-006 – EMU Rail Vehicle Support Services for CalMod

Upcoming IFB/RFQ/RFP to be Issued:

- RFP – Pantograph Inspection and Monitoring System
- RFQ – Scissor Lift Work Platform

Existing Contracts Amendments Issued:

- None
19.0 TIMELINE OF MAJOR PROJECT ACCOMPLISHMENTS

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

<table>
<thead>
<tr>
<th>Date</th>
<th>Milestone</th>
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<tbody>
<tr>
<td>2001</td>
<td>Began federal National Environmental Policy Act (NEPA) Environmental</td>
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<tr>
<td></td>
<td>Assessment (EA) / state EIR clearance process</td>
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<tr>
<td>2002</td>
<td>Conceptual Design completed</td>
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<tr>
<td>2004</td>
<td>Draft NEPA EA/EIR</td>
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<tr>
<td>2008</td>
<td>35% design complete</td>
</tr>
<tr>
<td>2009</td>
<td>Final NEPA EA/EIR and Finding of No Significant Impact (FONSI)</td>
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<tr>
<td>2014</td>
<td>RFQ for electrification</td>
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<td></td>
<td>RFI for EMU</td>
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<tr>
<td>2015</td>
<td>JPB approves final CEQA EIR</td>
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<td></td>
<td>JPB approves issuance of RFP for electrification</td>
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<tr>
<td></td>
<td>JPB approves issuance of RFP for EMU</td>
</tr>
<tr>
<td></td>
<td>Receipt of proposal for electrification</td>
</tr>
<tr>
<td></td>
<td>FTA approval of Core Capacity Project Development</td>
</tr>
<tr>
<td>2016</td>
<td>JPB approves EIR Addendum #1: PS-7</td>
</tr>
<tr>
<td></td>
<td>FTA re-evaluation of 2009 FONSI</td>
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<tr>
<td></td>
<td>Receipt of electrification best and final offers</td>
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<td></td>
<td>Receipt of EMU proposal</td>
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<td></td>
<td>Application for entry to engineering to FTA</td>
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<td></td>
<td>Completed the EMU Buy America Pre-Award Audit and Certification</td>
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<td></td>
<td>Negotiations completed with Stadler for EMU vehicles</td>
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<td>Negotiations completed with BBII, the apparent best-value electrification</td>
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<tr>
<td></td>
<td>firm</td>
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<tr>
<td></td>
<td>JPB approves contract award (LNTP) to BBII</td>
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<tr>
<td></td>
<td>JPB approves contract award (LNTP) to Stadler</td>
</tr>
<tr>
<td></td>
<td>FTA approval of entry into engineering for the Core Capacity Program</td>
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<td></td>
<td>Application for FFGA</td>
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<tr>
<td>2017</td>
<td>FTA finalized the FFGA for $647 million in Core Capacity funding, met all</td>
</tr>
<tr>
<td></td>
<td>regulatory requirements including end of Congressional Review Period</td>
</tr>
<tr>
<td></td>
<td>(February)</td>
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<tr>
<td></td>
<td>FTA FFGA executed, committing $647 million to the project (May)</td>
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<tr>
<td></td>
<td>JPB approves $1.98 billion budget for PCEP (June)</td>
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<tr>
<td></td>
<td>Issued NTP for EMUs to Stadler (June 1)</td>
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<tr>
<td></td>
<td>Issued NTP for electrification contract to BBII (June 19)</td>
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<tr>
<td></td>
<td>Construction began (August)</td>
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<tr>
<td></td>
<td>EMU manufacturing began (October)</td>
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<tr>
<td></td>
<td>Issued NTP for SCADA to Rockwell Collins (ARINC) (October)</td>
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<td></td>
<td>Issued NTP for CEMOF Facility Upgrades to HNTB (November)</td>
</tr>
<tr>
<td>Date</td>
<td>Milestone</td>
</tr>
<tr>
<td>------</td>
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</table>
| 2018 | Completed all PG&E agreements  
JPB approves contract award to Mitsui for the purchase of electric locomotives and Amtrak for overhaul services, storage, acceptance testing, training, and shipment of locomotive to CEMOF  
JPB approves authorization for the Executive Director to negotiate final contract award to ProVen for tunnel modifications and track rehabilitation project  
JPB approves contract award (LNTP) to ProVen for tunnel modifications  
Issued NTP to ProVen for tunnel modifications (October)  
Amended contract with ProVen to include OCS in the tunnels (November) |
| 2019 | JPB approves contract award to ProVen for CEMOF modifications (February)  
JPB approves LNTP to ProVen for CEMOF modifications (April)  
JPB approves NTP to ProVen for CEMOF modifications (September) |
APPENDICES
Appendix A – Acronyms
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIM</td>
<td>Advanced Information Management</td>
<td>EA</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>ARINC</td>
<td>Aeronautical Radio, Inc.</td>
<td>EAC</td>
<td>Estimate at Completion</td>
</tr>
<tr>
<td>BAAQMD</td>
<td>Bay Area Air Quality Management District</td>
<td>EIR</td>
<td>Environmental Impact Report</td>
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<tr>
<td>BBII</td>
<td>Balfour Beatty Infrastructure, Inc.</td>
<td>EOR</td>
<td>Engineer of Record</td>
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<td>CAISO</td>
<td>California Independent System Operator</td>
<td>EMU</td>
<td>Electric Multiple Unit</td>
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<td>CalMod</td>
<td>Caltrain Modernization Program</td>
<td>ESA</td>
<td>Endangered Species Act</td>
</tr>
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<td>Caltrans</td>
<td>California Department of Transportation</td>
<td>ESA</td>
<td>Environmental Site Assessments</td>
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<td>CDFW</td>
<td>California Department of Fish and Wildlife</td>
<td>FAI</td>
<td>First Article Inspection</td>
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<td>CEMOF</td>
<td>Centralized Equipment Maintenance and Operations Facility</td>
<td>FEIR</td>
<td>Final Environmental Impact Report</td>
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<td>CEQA</td>
<td>California Environmental Quality Act (State)</td>
<td>FNTP</td>
<td>Full Notice to Proceed</td>
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<td>CHSRA</td>
<td>California High-Speed Rail Authority</td>
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<td>Full Funding Grant Agreement</td>
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<td>CIP</td>
<td>Capital Improvement Plan</td>
<td>FONSI</td>
<td>Finding of No Significant Impact</td>
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<td>CNPA</td>
<td>Concurrent Non-Project Activity</td>
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<td>Federal Railroad Administration</td>
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<td>Design-Bid-Build</td>
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<td>Disadvantaged Business Enterprise</td>
<td>IFC</td>
<td>Issued for Construction</td>
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<td>Design, Engineering, and Management Planning</td>
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<td>Intelligent Transportation System</td>
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<td>JPB</td>
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<td>Acronym</td>
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<tr>
<td>MMRP</td>
<td>Mitigation, Monitoring, and Reporting Program</td>
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<td>MOU</td>
<td>Memorandum of Understanding</td>
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<td>National Historic Preservation Act</td>
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<td>Overhead Contact System</td>
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<td>PG&amp;E</td>
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<td>PHA</td>
<td>Preliminary Hazard Analysis</td>
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<td>PS</td>
<td>Paralleling Station</td>
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<td>Positive Train Control</td>
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Appendix B – Funding Partner Meetings
## Funding Partner Meeting Representatives

**Updated December 31, 2019**

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| **FTA Quarterly Meeting**                   | • Bruce Armistead  
• Boris Lipkin  
• Simon Whitehorn  
• Ian Ferrier (info only)  
• Wai Siu (info only)                                               | • Anne Richman          | • Luis Zurinaga                   | • April Chan  
• Peter Skinner       | • Jim Lawson                                   |
| **Funding Partners Quarterly Meeting**      | • Bruce Armistead  
• Boris Lipkin  
• Simon Whitehorn  
• John Popoff                                                   | • Trish Stoops           | • Luis Zurinaga                   | • April Chan  
• Peter Skinner       | • Krishna Davey                                |
| **Funding Oversight (monthly)**             | • Kelly Doyle                                   | • Anne Richman          | • Anna LaForte  
• Maria Lombardo  
• Luis Zurinaga  
• Monique Webster  
• Ariel Espiritu Santo | • April Chan  
• Peter Skinner       | • Jim Lawson  
• Marcella Rensi  
• Michael Smith                                                |
| **Change Management Board (monthly)**       | • Bruce Armistead  
• Boris Lipkin  
• Simon Whitehorn                                                   | • Trish Stoops           | • Luis Zurinaga                   | • Joe Hurley                | • Krishna Davey               |
| **Master Program Schedule Update (monthly)**| • Ian Ferrier  
• Wai Siu                                                   | • Trish Stoops           | • Luis Zurinaga                   | • Joe Hurley                | • Jim Lawson                  |
| **Risk Assessment Committee (monthly)**     | • Ian Ferrier  
• Wai Siu                                                   | • Trish Stoops           | • Luis Zurinaga                   | • Joe Hurley                | • Krishna Davey               |
| **PCEP Delivery Coordination Meeting (bi-weekly)** | • Ian Ferrier  
• Wai Siu                                                   | • Trish Stoops           | • Luis Zurinaga                   | • Joe Hurley                | • Krishna Davey               |
| **Systems Integration Meeting (bi-weekly)** | • Ian Ferrier  
• Wai Siu                                                   | • Trish Stoops           | • Luis Zurinaga                   | • Joe Hurley                | • Krishna Davey               |
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<td>375d</td>
<td>03-25-20 A</td>
<td>08-27-21</td>
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<tr>
<td>72</td>
<td>TRAINSET 9</td>
<td>369d</td>
<td>05-11-20 A</td>
<td>09-24-21</td>
</tr>
<tr>
<td>73</td>
<td>TRAINSET 10</td>
<td>370d</td>
<td>07-06-20 A</td>
<td>12-02-21</td>
</tr>
<tr>
<td>74</td>
<td>TRAINSET 11</td>
<td>375d</td>
<td>08-31-20 A</td>
<td>02-04-22</td>
</tr>
<tr>
<td>75</td>
<td>TRAINSET 12</td>
<td>365d</td>
<td>10-12-20 A</td>
<td>03-04-22</td>
</tr>
<tr>
<td>76</td>
<td>TRAINSET 13</td>
<td>370d</td>
<td>11-30-20 A</td>
<td>04-29-22</td>
</tr>
<tr>
<td>77</td>
<td>TRAINSET 14</td>
<td>350d</td>
<td>01-25-21 A</td>
<td>05-04-23</td>
</tr>
<tr>
<td>78</td>
<td>TESTING &amp; STARTUP (JPB)</td>
<td>211d</td>
<td>10-31-21 A</td>
<td>08-30-22</td>
</tr>
<tr>
<td>79</td>
<td>PRE-REVENUE TESTING</td>
<td>61d</td>
<td>10-31-21 A</td>
<td>12-30-21</td>
</tr>
<tr>
<td>80</td>
<td>REVENUE OPERATIONS</td>
<td>144d</td>
<td>02-01-22 A</td>
<td>08-22-22</td>
</tr>
<tr>
<td>81</td>
<td>Phased Revenue Service</td>
<td>69d</td>
<td>02-01-22 A</td>
<td>05-06-22</td>
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<tr>
<td>82</td>
<td>Revenue Service Date (RSD) w/ Risk Contingency</td>
<td>04</td>
<td>05-06-22</td>
<td></td>
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<tr>
<td>83</td>
<td>Revenue Service Date (RSD) w/ Risk Contingency (FRA RSD)</td>
<td>04</td>
<td>08-22-22</td>
<td></td>
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<tr>
<td>84</td>
<td>RISK CONTINGENCY</td>
<td>108d</td>
<td>05-07-22 A</td>
<td>08-30-22</td>
</tr>
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</table>
Appendix D – Standard Cost Codes
<table>
<thead>
<tr>
<th>Description of Work</th>
<th>Approved Budget (A)</th>
<th>Cost This Month (B)</th>
<th>Cost To Date (C)</th>
<th>Estimate To Complete (D)</th>
<th>Estimate At Completion (E) = (C) + (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 - VEHICLES (96)</td>
<td>$265,657,938</td>
<td>$7,464,803</td>
<td>$186,532,262</td>
<td>$437,327,023</td>
<td>$623,859,285</td>
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<tr>
<td>70 - Computer Rail</td>
<td>$592,327,111</td>
<td>$1,464,803</td>
<td>$185,993,981</td>
<td>$405,261,183</td>
<td>$591,265,165</td>
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<tr>
<td>70 - Demolition</td>
<td>$1,449,071</td>
<td>$5,791,360</td>
<td>$90,398,248</td>
<td>$54,831,838</td>
<td>$85,030,104</td>
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<tr>
<td>70 - Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70 - Construction &amp; Management</td>
<td>$25,347,672</td>
<td>$334,370</td>
<td>$14,422,546</td>
<td>$16,834,517</td>
<td>$31,257,063</td>
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<tr>
<td>70 - Construction &amp; Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70 - Engineering (not applicable to Small Stairs)</td>
<td>$187,284,094</td>
<td>$481,388</td>
<td>$195,597,792</td>
<td>($821,125)</td>
<td>$194,776,608</td>
</tr>
<tr>
<td>70 - Project Management</td>
<td>$5,042</td>
<td></td>
<td></td>
<td>$282,474</td>
<td>$282,474</td>
</tr>
<tr>
<td>70 - Project Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70 - Construction &amp; Management</td>
<td>$8,000,359</td>
<td>$8,000,359</td>
<td>$8,000,359</td>
<td>$8,000,359</td>
<td>$8,000,359</td>
</tr>
<tr>
<td>70 - Construction &amp; Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70 - Subtotal (70)</td>
<td>$1,814,075,737</td>
<td>$25,411,512</td>
<td>$804,159,292</td>
<td>$1,065,504,667</td>
<td>$1,869,663,959</td>
</tr>
<tr>
<td>70 - UNALLOCATED CONTINGENCY</td>
<td>$106,996,559</td>
<td>$0</td>
<td>$0</td>
<td>$511,108,337</td>
<td>$511,108,337</td>
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<tr>
<td>70 - Subtotal (70)</td>
<td>$1,920,772,294</td>
<td>$25,411,512</td>
<td>$804,159,292</td>
<td>$1,116,613,000</td>
<td>$1,920,772,294</td>
</tr>
<tr>
<td>100 - FINANCE CHARGES</td>
<td>$9,898,638</td>
<td>$155,000</td>
<td>$6,075,075</td>
<td>$3,823,568</td>
<td>$9,898,638</td>
</tr>
<tr>
<td>100 - Subtotal (100)</td>
<td>$9,906,530</td>
<td>$155,000</td>
<td>$6,075,075</td>
<td>$3,823,568</td>
<td>$9,898,638</td>
</tr>
<tr>
<td>100 - Total Project Cost (10 + 100)</td>
<td>$1,930,670,934</td>
<td>$25,566,512</td>
<td>$810,234,362</td>
<td>$1,120,436,572</td>
<td>$1,930,670,934</td>
</tr>
</tbody>
</table>

Appendix D – SCC

Peninsula Corridor Electrification Project Monthly Progress Report

D-1

December 31, 2019
Appendix E – Change Order Logs
## Change Order Logs

### Electrification Contract

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
<th>5% x $696,610,558 = $34,830,528</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Change Order Authority Usage</td>
<td>Remaining Authority</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>---------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>08/31/17</td>
<td>BBI-053-CCO-001</td>
<td>Track Access Delays Q4 2016</td>
<td>$85,472</td>
<td>0.25%</td>
</tr>
<tr>
<td>02/28/18</td>
<td>BBI-053-CCO-003</td>
<td>Deletion of Signal Cable Meggering (Testing)</td>
<td>($800,000)</td>
<td>(2.30%)</td>
</tr>
<tr>
<td>02/21/18</td>
<td>BBI-053-CCO-004</td>
<td>Field Order for Differing Site Condition Work performed on 6/19/17</td>
<td>$59,965</td>
<td>0.17%</td>
</tr>
<tr>
<td>03/12/18</td>
<td>BBI-053-CCO-006</td>
<td>Track Access Delays for Calendar Quarter 1 2017</td>
<td>$288,741</td>
<td>0.83%</td>
</tr>
<tr>
<td>04/24/18</td>
<td>BBI-053-CCO-002</td>
<td>Time Impact 01 Associated with Delayed NTP</td>
<td>$9,702,667</td>
<td>0.00%</td>
</tr>
<tr>
<td>04/24/18</td>
<td>BBI-053-CCO-008</td>
<td>2016 Incentives (Safety, Quality, and Public Outreach)</td>
<td>$750,000</td>
<td>0.00%</td>
</tr>
<tr>
<td>05/31/18</td>
<td>BBI-053-CCO-009</td>
<td>16th St. Grade Crossing Work Removal from BBI Contract</td>
<td>($885,198)</td>
<td>(1.97%)</td>
</tr>
<tr>
<td>05/31/18</td>
<td>BBI-053-CCO-012</td>
<td>2017 Incentives (Safety, Quality, and Public Outreach)</td>
<td>$1,025,000</td>
<td>0.00%</td>
</tr>
<tr>
<td>06/25/18</td>
<td>BBI-053-CCO-010</td>
<td>Pothole Change Of Shift</td>
<td>$300,000</td>
<td>0.86%</td>
</tr>
<tr>
<td>06/25/18</td>
<td>BBI-053-CCO-013</td>
<td>Field Order for Signal Cable Relocation (FO# 31)</td>
<td>$95,892</td>
<td>0.28%</td>
</tr>
<tr>
<td>06/25/18</td>
<td>BBI-053-CCO-015</td>
<td>TASI Pilot Transportation 2017</td>
<td>$67,345</td>
<td>0.19%</td>
</tr>
<tr>
<td>06/26/18</td>
<td>BBI-053-CCO-005</td>
<td>Field Orders for Signal Cable Relocation (FOs 26, 30)</td>
<td>$191,836</td>
<td>0.55%</td>
</tr>
<tr>
<td>06/28/18</td>
<td>BBI-053-CCO-014</td>
<td>Field Orders for Signal Cable Relocation (FO-36 &amp; FO-38)</td>
<td>$145,694</td>
<td>0.42%</td>
</tr>
<tr>
<td>06/29/18</td>
<td>BBI-053-CCO-007</td>
<td>Track Access Delays for Calendar Quarter 2 2017</td>
<td>$297,512</td>
<td>0.85%</td>
</tr>
<tr>
<td>06/29/18</td>
<td>BBI-053-CCO-011</td>
<td>Field Orders for Differing Site Condition (FO#s Partial 07A, 08-14)</td>
<td>$181,013</td>
<td>0.52%</td>
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<tr>
<td>06/29/18</td>
<td>BBI-053-CCO-017</td>
<td>Field Order for NorCal Utility Potholing (FO# 27)</td>
<td>$93,073</td>
<td>0.27%</td>
</tr>
<tr>
<td>06/29/18</td>
<td>BBI-053-CCO-018</td>
<td>Field Order for NorCal Utility Potholing (FO# 29)</td>
<td>$76,197</td>
<td>0.22%</td>
</tr>
<tr>
<td>06/29/18</td>
<td>BBI-053-CCO-020</td>
<td>Field Orders for Differing Site Condition (FOs 15-19)</td>
<td>$118,364</td>
<td>0.34%</td>
</tr>
<tr>
<td>07/19/18</td>
<td>BBI-053-CCO-019</td>
<td>Field Order for NorCal Utility Potholing (FO-032)</td>
<td>$88,956</td>
<td>0.26%</td>
</tr>
<tr>
<td>07/19/18</td>
<td>BBI-053-CCO-021</td>
<td>As In-Service (AIS) Drawings for Segment 2 and 4 Signal Design (CN-009)</td>
<td>$105,000</td>
<td>0.30%</td>
</tr>
<tr>
<td>07/25/18</td>
<td>BBI-053-CCO-022</td>
<td>CEMOF Yard Traction Power Feed (CN-008)</td>
<td>$332,700</td>
<td>0.96%</td>
</tr>
<tr>
<td>07/31/18</td>
<td>BBI-053-CCO-028</td>
<td>Sonic Echo Impulse Testing</td>
<td>$4,541</td>
<td>0.01%</td>
</tr>
<tr>
<td>07/31/18</td>
<td>BBI-053-CCO-026</td>
<td>TASI Pilot Transportation 2018 (CNC-0022)</td>
<td>$50,409</td>
<td>0.14%</td>
</tr>
<tr>
<td>07/31/18</td>
<td>BBI-053-CCO-027</td>
<td>Signal Cable Relocation (FOs-040 &amp; 051)</td>
<td>$195,114</td>
<td>0.56%</td>
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<tr>
<td>09/27/18</td>
<td>BBI-053-CCO-030</td>
<td>Delete Spare 115k Disconnect Switches</td>
<td>($19,000)</td>
<td>(0.05%)</td>
</tr>
<tr>
<td>09/28/18</td>
<td>BBI-053-CCO-031</td>
<td>Bldg A HVAC and FOB Card Reader Systems</td>
<td>$76,500</td>
<td>0.22%</td>
</tr>
<tr>
<td>09/28/18</td>
<td>BBI-053-CCO-025A</td>
<td>Addition of Shunt Wire at Transverse Utility Crossing Locations - Design</td>
<td>$925,000</td>
<td>2.66%</td>
</tr>
<tr>
<td>09/28/18</td>
<td>BBI-053-CCO-016A</td>
<td>UPRR MT-1 Pole Relocation - Design Changes</td>
<td>$903,000</td>
<td>0.00%</td>
</tr>
<tr>
<td>09/28/18</td>
<td>BBI-053-CCO-024A</td>
<td>PG&amp;E Utility Feed Connection to TPS#1 and TPS#2 (Design Only)</td>
<td>$727,000</td>
<td>0.00%</td>
</tr>
<tr>
<td>12/17/18</td>
<td>BBI-053-CCO-032</td>
<td>PS-2 Site Relocation (Design Only)</td>
<td>$291,446</td>
<td>0.84%</td>
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<tr>
<td>1/17/19</td>
<td>BBI-053-CCO-023</td>
<td>Insulated Rail Joints</td>
<td>$2,694,519</td>
<td>0.00%</td>
</tr>
<tr>
<td>1/17/19</td>
<td>BBI-053-CCO-029</td>
<td>CHSRA Early Pole Relocation (Design Only)</td>
<td>$625,000</td>
<td>0.00%</td>
</tr>
<tr>
<td>2/5/19</td>
<td>BBI-053-CCO-040A</td>
<td>Increase in Potholing Quantity (unit price contract bid item by 25%)</td>
<td>$1,662,500</td>
<td>4.77%</td>
</tr>
</tbody>
</table>
EMU Contract

Change Order Authority (5% of Stadler Contract)

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
<th>5% x $550,899,459 = $27,544,493</th>
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</thead>
<tbody>
<tr>
<td>09/22/17</td>
<td>STA-056-CCO-001</td>
<td>Contract General Specification and Special Provision Clean-up</td>
<td>$0</td>
<td>0.00%</td>
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<tr>
<td>10/27/17</td>
<td>STA-056-CCO-002</td>
<td>Prototype Seats and Special Colors</td>
<td>$55,000</td>
<td>0.20%</td>
</tr>
<tr>
<td>11/02/17</td>
<td>STA-056-CCO-003</td>
<td>Car Level Water Tightness Test</td>
<td>$0</td>
<td>0.00%</td>
</tr>
<tr>
<td>12/05/17</td>
<td>STA-056-CCO-004</td>
<td>Onboard Wheelchair Lift 800 Pound Capacity Provisions</td>
<td>$848,000</td>
<td>3.08%</td>
</tr>
</tbody>
</table>
### Peninsula Corridor Electrification Project
#### Monthly Progress Report

**Appendix E** – Change Order Logs

**E-3**  December 31, 2019

### Change Order Authority (5% of Stadler Contract)

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
<th>Change Order Authority Usage</th>
<th>Remaining Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/03/2017</td>
<td>STA-056-CGO 005</td>
<td>Design Progression (multiple)</td>
<td>$0</td>
<td>0.00%</td>
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</tr>
<tr>
<td>12/12/2017</td>
<td>STA-056-CGO 006</td>
<td>Prototype Seats and Special Colors</td>
<td>($27,500)</td>
<td>(0.10%)</td>
<td>$26,669,473</td>
</tr>
<tr>
<td>01/17/2018</td>
<td>STA-056-CGO 007</td>
<td>Multi-Color Destination Signs</td>
<td>$130,760</td>
<td>0.47%</td>
<td>$26,538,713</td>
</tr>
<tr>
<td>02/09/2018</td>
<td>STA-056-CGO 008</td>
<td>Adjustment to Delivery and LDs due to delayed FNTP</td>
<td>$490,000</td>
<td>0.00%</td>
<td>-</td>
</tr>
<tr>
<td>02/12/2018</td>
<td>STA-056-CGO 009</td>
<td>Ship Cab Mock-up to Caltrain</td>
<td>$53,400</td>
<td>0.19%</td>
<td>$26,485,313</td>
</tr>
<tr>
<td>04/17/2018</td>
<td>STA-056-CGO 010</td>
<td>Onboard Wheelchair Lift Locations</td>
<td>($1,885,050)</td>
<td>(6.84%)</td>
<td>$28,370,363</td>
</tr>
<tr>
<td>04/17/2018</td>
<td>STA-056-CGO 011</td>
<td>Multiple Change Group 3 and Scale Models</td>
<td>$0</td>
<td>0.00%</td>
<td>-</td>
</tr>
<tr>
<td>10/29/2018</td>
<td>STA-056-CGO 012</td>
<td>Multiple Change Group 4</td>
<td>$0</td>
<td>0.00%</td>
<td>-</td>
</tr>
<tr>
<td>10/29/2018</td>
<td>STA-056-CGO 013</td>
<td>Wheelchair Lift Installation Redesign</td>
<td>$228,400</td>
<td>0.83%</td>
<td>$28,141,963</td>
</tr>
<tr>
<td>12/14/2018</td>
<td>STA-056-CGO 014</td>
<td>PTC System Change</td>
<td>$0</td>
<td>0.00%</td>
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</tr>
<tr>
<td>12/22/2018</td>
<td>STA-056-CGO 015</td>
<td>EMU Option Cars</td>
<td>$172,800,047</td>
<td>0.00%</td>
<td>-</td>
</tr>
<tr>
<td>6/26/2019</td>
<td>STA-056-CGO 016</td>
<td>Testing at TTCI (Pueblo Facility) - First Trainset</td>
<td>$3,106,428</td>
<td>11.28%</td>
<td>$24,635,535</td>
</tr>
<tr>
<td>8/27/2019</td>
<td>STA-056-CGO 017</td>
<td>Virtual Reality Experience</td>
<td>$400,000</td>
<td>1.45%</td>
<td>$24,635,535</td>
</tr>
<tr>
<td>8/21/2019</td>
<td>STA-056-CGO 018</td>
<td>EMI Conducted Emissions Limits</td>
<td>$0</td>
<td>0.00%</td>
<td>$24,635,535</td>
</tr>
<tr>
<td>8/8/2019</td>
<td>STA-056-CGO 019</td>
<td>Option Car Payment Milestones</td>
<td>$0</td>
<td>0.00%</td>
<td>$24,635,535</td>
</tr>
<tr>
<td>8/21/2019</td>
<td>STA-056-CGO 020</td>
<td>Multiple No Cost No Schedule Impact Changes Group 5</td>
<td>$0</td>
<td>0.00%</td>
<td>$24,635,535</td>
</tr>
<tr>
<td>10/28/2019</td>
<td>STA-056-CGO 021</td>
<td>Plugging of High-Level Doorways</td>
<td>$736,013</td>
<td>2.67%</td>
<td>$23,899,523</td>
</tr>
<tr>
<td>11/13/2019</td>
<td>STA-056-CGO 022</td>
<td>Add Flip-Up Seats into Bike Cars (CNPA: $1.96M funded by Non-PCEP)</td>
<td>$1,961,350</td>
<td>7.12%</td>
<td>$21,938,173</td>
</tr>
</tbody>
</table>

**Total** $178,896,847  20.36%  $21,938,173

**Notes:**
1. When the threshold of 75% is reached, staff may return to the Board to request additional authority.
2. Change approved by the Board of Directors – not counted against the Executive Director’s Change Order Authority.
3. Third party improvements/CNPA projects that are funded with non-PCEP funds.

### SCADA Contract

**Change Order Authority (15% of ARINC Contract)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
<th>Change Order Authority Usage</th>
<th>Remaining Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>None to date</td>
<td></td>
<td></td>
<td>$0</td>
<td>0.00%</td>
<td>$517,038</td>
</tr>
</tbody>
</table>

**Total** $0  0.00%  $517,038

**Notes:**
1. When the threshold of 75% is reached, staff may return to the Board to request additional authority.
2. Change approved by the Board of Directors – not counted against the Executive Director’s Change Order Authority.

### Tunnel Modifications Contract

**Change Order Authority (10% of ProVen Contract)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
<th>Change Order Authority Usage</th>
<th>Remaining Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/27/2019</td>
<td>PROV-070-CCO-003</td>
<td>Track Access Delay</td>
<td>$25,350</td>
<td>0.46%</td>
<td>$5,482,428</td>
</tr>
</tbody>
</table>

**Total** $10% x $55,077,777 = $5,507,778

**Notes:**
1. When the threshold of 75% is reached, staff may return to the Board to request additional authority.
2. Change approved by the Board of Directors – not counted against the Executive Director’s Change Order Authority.
### Change Order Authority (10% of ProVen Contract)

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
<th>10% x $55,077,777 = $5,507,778</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/27/2019</td>
<td>PROV-070-COO-004</td>
<td>Additional OCS Potholing Due to Conflict with Existing Utilities</td>
<td>$70,935</td>
<td>1.29 %</td>
</tr>
<tr>
<td>3/27/2019</td>
<td>PROV-070-COO-005</td>
<td>Install Tie Backs and Piles in Boulders at Tunnel 4</td>
<td>$29,478</td>
<td>0.54 %</td>
</tr>
<tr>
<td>3/28/2019</td>
<td>PROV-070-COO-001</td>
<td>Partnering Meetings (50% PCEP)</td>
<td>$14,443</td>
<td>0.26 %</td>
</tr>
<tr>
<td>4/25/2019</td>
<td>PROV-070-COO-002</td>
<td>Furnish Galvanized E-clips</td>
<td>$37,239</td>
<td>0.68 %</td>
</tr>
<tr>
<td>4/30/2019</td>
<td>PROV-070-COO-006</td>
<td>Additional Rock Bolts and Testing</td>
<td>$22,549</td>
<td>0.41 %</td>
</tr>
<tr>
<td>5/23/2019</td>
<td>PROV-070-COO-013</td>
<td>Late Removal of Leaky Feeder Tunnel 4 (T-4)</td>
<td>$21,225</td>
<td>0.39 %</td>
</tr>
<tr>
<td>5/28/2019</td>
<td>PROV-070-COO-014</td>
<td>OCS Piles Utility Conflict at Tunnel-1 South (T-1S)</td>
<td>$16,275</td>
<td>0.30 %</td>
</tr>
<tr>
<td>5/29/2019</td>
<td>PROV-070-COO-012</td>
<td>OCS Piles Utility Conflict at T-4S</td>
<td>$6,871</td>
<td>0.12 %</td>
</tr>
<tr>
<td>5/31/2019</td>
<td>PROV-070-COO-016A</td>
<td>Portal Structure Detailing Changes</td>
<td>$84,331</td>
<td>1.53 %</td>
</tr>
<tr>
<td>6/18/2019</td>
<td>PROV-070-COO-009</td>
<td>Creosote Ties Covering (CNPA - Drainage $3,116.00)</td>
<td>$3,116</td>
<td>0.06 %</td>
</tr>
<tr>
<td>6/28/2019</td>
<td>PROV-070-COO-008</td>
<td>Micropiles at South Tunnel-2 South (T-2S)</td>
<td>$41,322</td>
<td>0.75 %</td>
</tr>
<tr>
<td>6/28/2019</td>
<td>PROV-070-COO-010</td>
<td>Salvage Transition Panels (CNPA - Drainage $6,144.00)</td>
<td>$6,144</td>
<td>0.11 %</td>
</tr>
<tr>
<td>6/28/2019</td>
<td>PROV-070-COO-011</td>
<td>Demo PVC and Plug Tunnel-1 South (T-1S) (CNPA - Drainage $4,035.00)</td>
<td>$4,035</td>
<td>0.07 %</td>
</tr>
<tr>
<td>6/28/2019</td>
<td>PROV-070-COO-020</td>
<td>Unidentified SD Conflict with Junction Inlet (CNPA - Drainage $1,976.00)</td>
<td>$1,976</td>
<td>0.04 %</td>
</tr>
<tr>
<td>9/26/2019</td>
<td>PROV-070-COO-007</td>
<td>Canopy Tube Drilling</td>
<td>$89,787</td>
<td>1.63 %</td>
</tr>
<tr>
<td>9/26/2019</td>
<td>PROV-070-COO-023</td>
<td>Over-excavate Trapezoidal Ditch at T-1N (CNPA - Drainage $46,914.00)</td>
<td>$46,914</td>
<td>0.85 %</td>
</tr>
<tr>
<td>10/4/2019</td>
<td>PROV-070-COO-029</td>
<td>Additional DryFix Pins</td>
<td>$105,000</td>
<td>1.91 %</td>
</tr>
<tr>
<td>10/4/2019</td>
<td>PROV-070-COO-021</td>
<td>Out of Sequence Piles</td>
<td>$185,857</td>
<td>3.37 %</td>
</tr>
<tr>
<td>10/30/2019</td>
<td>PROV-070-COO-017</td>
<td>Hard Piping in T-4 (CNPA - Drainage $2,200.00)</td>
<td>$2,200</td>
<td>0.04 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>$815,047</strong></td>
<td><strong>14.80 %</strong></td>
</tr>
</tbody>
</table>

### Change Order Authority Usage

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
<th>Change Order Authority Usage</th>
<th>Remaining Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>None to date</td>
<td></td>
<td></td>
<td><strong>$0</strong></td>
<td><strong>0.00 %</strong></td>
<td><strong>$655,078</strong></td>
</tr>
</tbody>
</table>

### Notes:

1. Tunnel modifications contract ($55,077,777) includes: Notching ($25,281,170), Drainage ($13,196,607) and OCS Installation ($16,600,000).

2. When the threshold of 75% is reached, staff may return to the Board to request additional authority.

3. Change approved by the Board of Directors – not counted against the Executive Director's Change Order Authority.

4. Third Party Improvements/CNPA Projects that are funded with non-PCEP funds.

---

### CEMOF Modifications Contract

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
<th>10% x $6,550,777 = $655,078</th>
</tr>
</thead>
<tbody>
<tr>
<td>None to date</td>
<td></td>
<td></td>
<td><strong>$0</strong></td>
<td><strong>0.00 %</strong></td>
</tr>
</tbody>
</table>

### Notes:

1. When the threshold of 75% is reached, staff may return to the Board to request additional authority.

2. Change approved by the Board of Directors – not counted against the Executive Director’s Change Order Authority.
### AMTRAK AEM-7 Contract

<table>
<thead>
<tr>
<th>Date</th>
<th>Change Number</th>
<th>Description</th>
<th>CCO Amount</th>
<th>Change Order Authority Usage</th>
<th>Remaining Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/25/2019</td>
<td>AMTK-066-CCO-001</td>
<td>Change to Amtrak Contract for Test Locomotives</td>
<td>(72,179)</td>
<td>(48.12%)</td>
<td>$222,179</td>
</tr>
</tbody>
</table>

**Total** | (72,179) | (48.12%) | $222,179 |

**Notes:**

1. When the threshold of 75% is reached, staff may return to the Board to request additional authority.
Appendix F – Risk Table
## Listing of PCEP Risks and Effects in Order of Severity

<table>
<thead>
<tr>
<th>ID</th>
<th>RISK DESCRIPTION</th>
<th>EFFECT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>313</td>
<td>Contractor incorrect sequencing of utility locates, preliminary design, final</td>
<td>Delay and additional cost for rework.</td>
</tr>
<tr>
<td></td>
<td>design, and foundation construction may result in inefficiencies in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>construction, redesign, and reduced production rates.</td>
<td></td>
</tr>
<tr>
<td>303</td>
<td>Extent of differing site conditions and associated redesign efforts results in</td>
<td>More differing site conditions and longer to resolve.</td>
</tr>
<tr>
<td></td>
<td>delays to the completion of the electrification contract and increases</td>
<td>Extends construction of foundations and the OCS system and results in</td>
</tr>
<tr>
<td></td>
<td>program costs.</td>
<td>less efficient construction of foundations.</td>
</tr>
<tr>
<td>314</td>
<td>The contractor may not complete and install signal design including CWT</td>
<td>Delay and additional cost for rework.</td>
</tr>
<tr>
<td></td>
<td>modifications within budget and schedule.</td>
<td></td>
</tr>
<tr>
<td>242</td>
<td>Track access does not comply with contract-stipulated work windows.</td>
<td>Contractor claims for delays, schedule delays and associated costs to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>owner’s representative staff.</td>
</tr>
<tr>
<td>223</td>
<td>Major program elements may not be successfully integrated with existing</td>
<td>Proposed changes resulting from electrification may not be fully and</td>
</tr>
<tr>
<td></td>
<td>operations and infrastructure in advance of revenue service.</td>
<td>properly integrated into existing system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rework resulting in cost increases and schedule delays</td>
</tr>
<tr>
<td>257</td>
<td>Potential that modifications to the PTC database and signal software are not</td>
<td>Failure to follow the Configuration Management process will result in</td>
</tr>
<tr>
<td></td>
<td>completed in time for cutover and testing.</td>
<td>delays to completing PCEP signal cutovers. This could delay milestone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>completion as well as project substantial completion.</td>
</tr>
<tr>
<td>267</td>
<td>Additional property acquisition is necessitated by change in design.</td>
<td>New project costs and delays to schedule.</td>
</tr>
<tr>
<td>273</td>
<td>Contractor generates hazardous materials, that necessitates proper removal and</td>
<td>Delay to construction while removing and disposing of hazardous materials</td>
</tr>
<tr>
<td></td>
<td>disposal in excess of contract allowances and expectations.</td>
<td>resulting in schedule delay, increased construction costs, and schedule</td>
</tr>
<tr>
<td></td>
<td></td>
<td>delay costs.</td>
</tr>
<tr>
<td>308</td>
<td>Rejection of DVR for ATF and static wires results in cost and schedule impacts</td>
<td>Delay and delay claims.</td>
</tr>
<tr>
<td></td>
<td>to PCEP.</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>RISK DESCRIPTION</td>
<td>EFFECT(S)</td>
</tr>
<tr>
<td>----</td>
<td>-----------------</td>
<td>-----------</td>
</tr>
</tbody>
</table>
| 298 | Changes to PTC implementation schedule could delay completion of the electrification work. Cost and schedule of BBII contract could increase as a result of change in PTC system. | 1. Changes in datafiles could affect what Balfour provides; could delay timing for testing; could change books that FRA had to review.  
2. Full integrated testing between EMU and wayside cannot be conducted without PTC in place.  
3. Delays to completion of signal system could result in conflicts with PTC testing and PCEP construction and integrated testing.  
4. Potential for track access impacts due to PTC testing. |
| 309 | Potential that vehicles will not receive timely notification from FRA of compliance with acceptable alternate crash management standards. | Delays to completion of construction and additional cost to changes in design. |
| 209 | TASI may not have sufficient number of signal maintainers for testing. | • Delays to construction/testing.  
• Delays to completion of infrastructure may delay acceptance of vehicles. |
| 10 | Potential for Stadler's sub-suppliers to fall behind schedule or delays in parts supply chain result in late completion of vehicles. | • Delay in obtaining parts / components.  
• Cost increases. (See Owner for allocation of costs)  
• Schedule increase - 3 months (See Owner for allocation of damages associated with this Risk) |
| 240 | Property not acquired in time for contractor to do work. Property Acquisition not complete per contractor availability date  
<> Fee  
<> Easement  
<> Contract stipulates that if parcels are not available by contract date, there is only a delay if parcels are not available by the time contractor completes the Segment. | • Potential delays in construction schedule |
<p>| 244 | Determine that there is sufficient storage for both EMU and Diesel fleets while maintaining Yard/Vehicle operability. | Potential delay in completion of Test &amp; Commissioning due to vehicle movements &amp; logistics. |
| 263 | Collaboration across multiple disciplines to develop a customized rail activation program may fail to comprehensively address the full scope of issues required to operate and maintain an electrified railroad and decommission the current diesel fleet. | Delay in testing of EMUs. Delay in Revenue Service Date. Additional costs for Stadler and BBII due to overall schedule delays. |</p>
<table>
<thead>
<tr>
<th>ID</th>
<th>RISK DESCRIPTION</th>
<th>EFFECT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>302</td>
<td>May not have a 110-mph electrified section of track that will be ready for testing for final acceptance of vehicle.</td>
<td>Contract with Stadler implies readiness of Electrification Project and track upgrades for EMU testing. Delays in testing may increase Caltrain costs.</td>
</tr>
<tr>
<td>312</td>
<td>Project executed the OCS Option; increase in procurement durations for necessary OCS Parts (Conductor Rail) has led to an associated increase in costs and schedule duration for the overall project</td>
<td>Additional cost to project, primarily from additional bus bridges.</td>
</tr>
<tr>
<td>315</td>
<td>Increased oversight and schedule risk associated with Stadler plan to move car shell manufacturing to a new Switzerland facility. And to implement second shift of sub-assembly production in Altenrhein AC106</td>
<td>Increased PCEP oversight costs possible trainset delivery schedule slippage</td>
</tr>
<tr>
<td>67</td>
<td>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 BBII’s construction schedule.</td>
<td>Delay in progress of catenary installation resulting in claims and schedule delay</td>
</tr>
<tr>
<td>115</td>
<td>Other capital improvement program projects compete with PCEP for track access allocation and requires design coordination (design, coordination, integration).</td>
<td>Schedule delay as resources are allocated elsewhere, won’t get track time, sequencing requirements may delay PCEP construction, track access requirements must be coordinated.</td>
</tr>
<tr>
<td>136</td>
<td>UP reviews of BBI design may extend project duration.</td>
<td>Delays to completion of design and claims for delay.</td>
</tr>
<tr>
<td>261</td>
<td>EMU electromechanical emissions and track circuit susceptibility are incompatible.</td>
<td>Changes on the EMU and/or signal system require additional design and installation time and expense.</td>
</tr>
<tr>
<td>277</td>
<td>Inadequate D-B labor to support multiple work segments</td>
<td>Additional cost and time</td>
</tr>
<tr>
<td>281</td>
<td>BBI’s ability to complete base scope for signal/pole adjustments may be required to remedy sight distance impediments arising from modifications to original design.</td>
<td>Add repeater signals, design duct bank would result in increased design and construction costs.</td>
</tr>
<tr>
<td>285</td>
<td>Potential for inflation, (except with respect to Maintenance Option) to increase contractor costs.</td>
<td>Higher cost</td>
</tr>
<tr>
<td>286</td>
<td>Potential for wage escalation, (except for Maintenance Option) to increase contractor costs.</td>
<td>Higher cost</td>
</tr>
<tr>
<td>ID</td>
<td>RISK DESCRIPTION</td>
<td>EFFECT(S)</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>287</td>
<td>Design changes may necessitate additional implementation of environmental mitigations not previously budgeted.</td>
<td>Increased cost for environmental measures and delays to construct and overall delay in construction schedule</td>
</tr>
<tr>
<td>295</td>
<td>ProVen may not be able to complete termination structures prior to Balfour completing Segment 1.</td>
<td>Delays to completion of construction and associated claims costs.</td>
</tr>
<tr>
<td>296</td>
<td>BBII needs to complete interconnection and traction power substations be sufficiently complete to accept interim power</td>
<td>Delay in testing and increased costs</td>
</tr>
<tr>
<td>304</td>
<td>Solution to FRA concerns over bike storage impeding path to emergency exit windows path results in increased costs and potential rework.</td>
<td>Protracted negotiations with FRA to achieve original design</td>
</tr>
<tr>
<td>13</td>
<td>Vehicle manufacturer could default.</td>
<td>Prolonged delay to resolve issues (up to 12 months)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase in legal expenses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Potential price increase to resolve contract issue</td>
</tr>
<tr>
<td>12</td>
<td>Potential for electromagnetic interference (EMI) to private facilities with sensitive electronic equipment caused by vehicles.</td>
<td>• Increased cost due to mitigation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Potential delay due to public protests or environmental challenge.</td>
</tr>
<tr>
<td>56</td>
<td>Lack of operations personnel for testing.</td>
<td>• Testing delayed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Change order for extended vehicle acceptance.</td>
</tr>
<tr>
<td>88</td>
<td>Construction safety program fails to sufficiently maintain safe performance.</td>
<td>Work stoppages due to safety incidents resulting in schedule delay and additional labor costs.</td>
</tr>
<tr>
<td>161</td>
<td>Unanticipated costs to provide alternate service (bus bridges, etc.) during rail service disruptions.</td>
<td>Cost increase.</td>
</tr>
<tr>
<td>183</td>
<td>Installation and design of new duct bank takes longer because of UP coordination</td>
<td>Schedule - Delay. May need to use condemnation authority to acquire easement.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost - Additional cost for PG&amp;E to make connections increasing project costs</td>
</tr>
<tr>
<td>247</td>
<td>Timely resolution of 3rd party design review comments to achieve timely approvals</td>
<td>Delay to completion of design and associated additional labor costs.</td>
</tr>
<tr>
<td>270</td>
<td>OCS poles or structures as designed by Contractor fall outside of JPB row</td>
<td>Additional ROW Take, additional cost and time</td>
</tr>
<tr>
<td>ID</td>
<td>RISK DESCRIPTION</td>
<td>EFFECT(S)</td>
</tr>
<tr>
<td>----</td>
<td>------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>294</td>
<td>UP does not accept catenary pole offsets from centerline of track necessitating further negotiation or relocation of poles</td>
<td>Delay to construction and additional costs for redesign and ROW acquisition.</td>
</tr>
<tr>
<td>82</td>
<td>Unexpected restrictions could affect construction progress:  &lt;&gt; night work  &lt;&gt; noise  &lt;&gt; local roads  &lt;&gt; local ordinances</td>
<td>• Reduced production rates.  • Delay</td>
</tr>
<tr>
<td>241</td>
<td>Segment 4 substantially complete (Segment 4, TPS-2, Interconnect) may not be installed prior to scheduled exercising of EMUs</td>
<td>Inability to exercise EMUs</td>
</tr>
<tr>
<td>253</td>
<td>Risk that existing conditions of Caltrans-owned bridges will not support bridge barriers. The existing bridge conditions and structural systems are unknown and may not support mounting new work. Design will need to prove new barriers will not impact existing capacity of the bridges prior to Caltrans’s approval for construction. Without approval of design and issuance of permit, there is risk to the schedule for the work and also budget if during design existing bridge will require some upgrades due to the introduction of new attachments.</td>
<td>Delays to issuance of permit for construction while negotiating and executing an operation and maintenance agreement for equipment installed on bridges; existing bridge deficiencies could result in additional costs to PCEP.</td>
</tr>
<tr>
<td>11</td>
<td>Risks in achieving acceptable vehicle operations performance:  &lt;&gt; software problems  &lt;&gt; electrical system problems  &lt;&gt; mechanical problems  &lt;&gt; systems integration problems</td>
<td>Cost increase.  Delays vehicle acceptance  Potential spill-over to other program elements</td>
</tr>
<tr>
<td>16</td>
<td>Inter-operability issues with diesel equipment.</td>
<td>Cost increase.</td>
</tr>
<tr>
<td>31</td>
<td>New cars possibly not reliable enough to be put into service as scheduled</td>
<td>Operating plan negatively impacted</td>
</tr>
<tr>
<td>78</td>
<td>Need for unanticipated, additional ROW for new signal enclosures.</td>
<td>Delay while procuring ROW and additional ROW costs.</td>
</tr>
<tr>
<td>171</td>
<td>Electrification facilities could be damaged during testing.</td>
<td>Delay in commencing electrified operations.</td>
</tr>
<tr>
<td>ID</td>
<td>RISK DESCRIPTION</td>
<td>EFFECT(S)</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>190</td>
<td>Track roughness and cant could present problems for European vehicles which are</td>
<td>Vehicle cost increase.</td>
</tr>
<tr>
<td></td>
<td>accustomed to a higher class of track bed maintenance.</td>
<td>Vehicle delivery delay.</td>
</tr>
<tr>
<td></td>
<td>Becomes problematic with concept of specifying &quot;off-the-shelf&quot; design.</td>
<td></td>
</tr>
<tr>
<td>251</td>
<td>Subcontractor and supplier performance to meet aggressive schedule &lt;&gt; Potential</td>
<td>Delay to production schedule resulting in increased soft costs and overall project schedule</td>
</tr>
<tr>
<td></td>
<td>issue meeting Buy America requirements</td>
<td>delay.</td>
</tr>
<tr>
<td>271</td>
<td>Need for additional construction easements beyond that which has been provided</td>
<td>Additional cost and time</td>
</tr>
<tr>
<td></td>
<td>for Contractor proposed access and staging</td>
<td></td>
</tr>
<tr>
<td>272</td>
<td>Final design based upon actual Geotech conditions</td>
<td>Could require changes</td>
</tr>
<tr>
<td>289</td>
<td>Coordination and delivery of permanent power for power drops for everything</td>
<td>Can't test resulting in delays to schedule and associated additional project costs.</td>
</tr>
<tr>
<td></td>
<td>except traction power substations along alignment</td>
<td></td>
</tr>
<tr>
<td>291</td>
<td>Order/manufacture of long lead items prior to 100% IFC design document that</td>
<td>Design change and/or delays</td>
</tr>
<tr>
<td></td>
<td>proves to be incorrect</td>
<td></td>
</tr>
<tr>
<td>292</td>
<td>Potential that UPS will not fit in the spaces allotted to communications work</td>
<td>Requisite backup capacity units under design criteria could result in the need for larger</td>
</tr>
<tr>
<td></td>
<td>within the buildings.</td>
<td>unit than originally planned resulting in design and fabrication changes and associated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>schedule delays and costs.</td>
</tr>
<tr>
<td>311</td>
<td>Although project recordable injuries remain below the industry average, there</td>
<td>The occurrence of a high impact safety event could result in project rework, construction</td>
</tr>
<tr>
<td></td>
<td>have been numerous small impact incidents occurring that could potentially lead</td>
<td>delays, and increased project costs.</td>
</tr>
<tr>
<td></td>
<td>to a more serious event occurring.</td>
<td></td>
</tr>
<tr>
<td>316</td>
<td>PTC system “freeze periods” during revenue service demonstration periods may</td>
<td>Delays and additional costs associated with interruption of efficient workflow.</td>
</tr>
<tr>
<td></td>
<td>delay Balfour activities including: cutovers at new locations, taking signals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>out of service, making software changes in a location, and splicing into fiber.</td>
<td></td>
</tr>
<tr>
<td>317</td>
<td>JPB may not make timely acquisition of resources to staff rail activation plan</td>
<td>Delay in operating electrified railroad - delay of RSD.</td>
</tr>
<tr>
<td></td>
<td>with key personnel.</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>RISK DESCRIPTION</td>
<td>EFFECT(S)</td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>19</td>
<td>Potential for vehicle delivery to be hampered by international conflict; market disruption; labor strikes at production facility.</td>
<td>Delay in production of vehicle with associated cost implications.</td>
</tr>
<tr>
<td>21</td>
<td>EMU production delay. Possible that there are quality issues, failed factory tests, poor integration / control of suppliers.</td>
<td>Schedule Increase - up to 6 months (6 months float already built into 36 month schedule)</td>
</tr>
<tr>
<td>27</td>
<td>Vehicle power consumption may not meet requirements.</td>
<td>Issue with PG&amp;E. Can't run full acceleration.</td>
</tr>
<tr>
<td>42</td>
<td>Full complement of EMUs not available upon initiation of electrified revenue service</td>
<td>Late delivery impacts revenue service date.</td>
</tr>
<tr>
<td>55</td>
<td>Failure to pass Qualification Testing.</td>
<td>Cost Increase - minimal Schedule delay</td>
</tr>
<tr>
<td>61</td>
<td>Latent defects in EMU vehicles.</td>
<td>Unbudgeted costs incurred from legal actions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Repairs take trains out-of-service.</td>
</tr>
<tr>
<td>101</td>
<td>PG&amp;E may not be able to deliver permanent power for the project within the existing budget and in accordance with the project schedule</td>
<td>Additional project costs; potential delay to revenue service date</td>
</tr>
<tr>
<td>150</td>
<td>Number of OCS pole installation is significant. Any breakdown in sequencing of operations or coordination of multiple crews will have a substantial effect on the project.</td>
<td>Delay.</td>
</tr>
<tr>
<td>245</td>
<td>Failure of BBI to submit quality design and technical submittals in accordance with contract requirements  • $3-$5M/month burn rate for Owner's team during peak</td>
<td>Delays to project schedule and additional costs for preparation and review of submittals.</td>
</tr>
<tr>
<td>252</td>
<td>Failure of BBI to order/manufacture long lead items prior to 100% IFC design document approval by JPB</td>
<td>Delays to project schedule and additional cost for contractor and JPB staff time.</td>
</tr>
<tr>
<td>306</td>
<td>Possible legal challenge and injunction to any changes in PCEP requiring subsequent CEQA or NEPA environmental clearance documentation/actions.</td>
<td>Worst case: a judge issues an injunction, which would prohibit any work ONLY on the project scope of the environmental document. Impact to the project from cost and schedule impact depends on if work is on the critical or becomes on the critical path.</td>
</tr>
<tr>
<td>ID</td>
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</tr>
<tr>
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</tr>
<tr>
<td>8</td>
<td>Requests for change orders after vehicles are in production</td>
<td>Delays to manufacturing of vehicles and additional design and manufacturing costs.</td>
</tr>
<tr>
<td>23</td>
<td>Manufacturer cannot control vehicle weight to meet specifications.</td>
<td>Increased operating cost.</td>
</tr>
<tr>
<td>25</td>
<td>Potential that vehicles cannot meet requirements for &quot;Mean Time to Repair&quot; (MTTR).</td>
<td>Increased maintenance cost.</td>
</tr>
<tr>
<td>32</td>
<td>Failure to come up to speed on stakeholder safety requirements: &lt;&gt; FTA &lt;&gt; FRA &lt;&gt; CPUC</td>
<td>Takes longer than expected to gain FRA/FTA concurrence on waiver and/or level boarding requirements.</td>
</tr>
<tr>
<td>51</td>
<td>Damage during delivery of first six EMUs.</td>
<td>Schedule delay</td>
</tr>
<tr>
<td>53</td>
<td>Failure to meet Buy America requirements. (Contractor definition of component v. sub-component may not be accepted by Caltrain / FTA.)</td>
<td>Potential need for negotiations that might lead to delay of project award. (BA is not negotiable)</td>
</tr>
<tr>
<td>54</td>
<td>Infrastructure not ready for vehicles (OCS, TPS, Commissioning site / facility).</td>
<td>Increases cost if done off property</td>
</tr>
<tr>
<td>69</td>
<td>Potential need for additional construction easements. Especially for access and laydown areas. Contractor could claim project is not constructible and needs more easements after award.</td>
<td>Increased cost Delay</td>
</tr>
<tr>
<td>87</td>
<td>Unanticipated HazMat or contaminated hot spots encountered during foundation excavations for poles, TPSS, work at the yards.</td>
<td>Increased cost for clean-up and handling of materials and delay to schedule due to HazMat procedures.</td>
</tr>
<tr>
<td>ID</td>
<td>RISK DESCRIPTION</td>
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</tr>
<tr>
<td>----</td>
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<td>-----------</td>
</tr>
<tr>
<td>106</td>
<td>Potential that DB contractor will have insufficient field resources (personnel or equipment) to maintain aggressive schedule.</td>
<td>Delay.</td>
</tr>
<tr>
<td>106</td>
<td>Multiple segments will need to be under design simultaneously.</td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>Labor pool issue. 32 qualified linemen will be needed. Potential there is not enough available. Big storm damage anywhere in US will draw from the pool to make line repairs. Possible shortages with other specialty crafts as well.</td>
<td></td>
</tr>
<tr>
<td>151</td>
<td>Public could raise negative concerns regarding wheel/rail noise.</td>
<td>Increased cost to mitigate:</td>
</tr>
<tr>
<td>151</td>
<td>&lt;&gt; grind rails</td>
<td></td>
</tr>
<tr>
<td>151</td>
<td>&lt;&gt; reprofile wheels</td>
<td></td>
</tr>
<tr>
<td>151</td>
<td>&lt;&gt; sound walls</td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>Compliance with Buy America requirements for 3rd party utility relocations.</td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>&lt;&gt;Utility relocations covered under existing Caltrain agreements that require utilities to move that will not have effect on project cost - will not be Buy America</td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>&lt;&gt;Installation of new equipment inside PG&amp;E substations that will provide all PG&amp;E customers, about 1/6 of that provides power to our system - is upgrade that benefits all customers subject to Buy America requirements, is it 1/6th, or 100%</td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>&lt;&gt;Risk is substation not relocations</td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>&lt;&gt;Substation equipment is available domestically, has 6 month longer lead time and increased cost of 20%</td>
<td></td>
</tr>
<tr>
<td>192</td>
<td>Environmental compliance during construction.</td>
<td></td>
</tr>
<tr>
<td>192</td>
<td>- Potential impact to advancing construction within the vicinity of any cultural finds that are excavated.</td>
<td></td>
</tr>
<tr>
<td>192</td>
<td>- Failure to meet the commitments contained within the PCEP EA, FEIR and permit conditions</td>
<td></td>
</tr>
<tr>
<td>192</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix F – Risk Table  
F-9  
December 31, 2019
<table>
<thead>
<tr>
<th>ID</th>
<th>RISK DESCRIPTION</th>
<th>EFFECT(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>195</td>
<td>Introduction of electrified train service will require training of first responders in working in and around the rail corridor. The new vehicles will be considerably quieter than the existing fleet and the presence of high voltage power lines will require new procedures for emergency response. A new training program will need to be developed and disseminated for: • Fire, police, and first responders • Local communities • Schools</td>
<td>Safety hazards resulting in incidents that delay construction and increase labor cost. Delays in RSD until training is completed as requirement of safety certification process.</td>
</tr>
<tr>
<td>237</td>
<td>JPB needs an agreement with each city in which catenary will be strung over an existing grade crossing (17 in all) under GO 88 (grade crossings). These agreements must be executed subsequent to installing overhead catenary. JPB is preparing a response to CPUC while working with the cities. Delays in reaching agreement could have impacts on schedule and budget.</td>
<td>Not completing the grade crossing diagnostics and getting agreement from the cities on the results can result in delays to necessary approvals for the project and revenue service.</td>
</tr>
<tr>
<td>248</td>
<td>3rd party coordination &lt;&gt;Jurisdictions, Utilities, UP, Contractors &lt;&gt;D/B needs to provide timely information to facilitate 3rd party coordination &lt;&gt;Risk is for construction</td>
<td>Delays in approvals resulting in project schedule delays and associated costs.</td>
</tr>
<tr>
<td>250</td>
<td>Potential for municipalities to request betterments as part of the electrification project.</td>
<td>Delay to project schedule in negotiating betterments as part of the construction within municipalities and associated increased cost to the project as no betterments were included in the project budget.</td>
</tr>
<tr>
<td>254</td>
<td>Potential that bridge clearance data are inaccurate and that clearances are not sufficient for installation of catenary.</td>
<td>Results in additional design and construction to create sufficient clearance.</td>
</tr>
<tr>
<td>259</td>
<td>Work on 25th Avenue Grade Separation Project could delay Balfour construction schedule.</td>
<td>• Increased cost for BBI as catenary construction in this section was anticipated to be constructed under the 25th Avenue Grade Separation Project. • Potential delays in construction schedule • Risk is delay to BBI</td>
</tr>
<tr>
<td>266</td>
<td>Verizon poles in conflict with OCS may not be removed in advance of OCS installation.</td>
<td>Delay in progress of catenary installation resulting in claims and schedule delay</td>
</tr>
<tr>
<td>274</td>
<td>JPB as-built drawings and existing infrastructure to be used as basis of final design and construction is not correct</td>
<td>Additional cleanup of as-builts after PCEP construction</td>
</tr>
<tr>
<td>ID</td>
<td>RISK DESCRIPTION</td>
<td>EFFECT(S)</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>275</td>
<td>DB fails to verify as-built drawings and existing infrastructure</td>
<td>Additional cleanup of as-builds after PCEP construction</td>
</tr>
<tr>
<td>278</td>
<td>Failure of D/B contractor and subcontractors and suppliers to meet Buy America requirements</td>
<td>Delays while acceptable materials are procured and additional costs for delays and purchase of duplicative equipment.</td>
</tr>
<tr>
<td>282</td>
<td>Failure to maintain dynamic envelope and existing track clearances consistent with requirements.</td>
<td>Redesign entailing cost and schedule impacts.</td>
</tr>
<tr>
<td>284</td>
<td>Compliance with project labor agreement could result in inefficiencies in staffing of construction.</td>
<td>Increase in labor costs and less efficient construction resulting in schedule delays.</td>
</tr>
<tr>
<td>290</td>
<td>Delays in agreement and acceptance of initial VVSC requirements database.</td>
<td>Delay to design acceptance</td>
</tr>
<tr>
<td>293</td>
<td>Readiness of 115kV interconnect for temporary power to support testing.</td>
<td>Delay in testing</td>
</tr>
</tbody>
</table>
| 297 | Cost and schedule of Stadler contract could increase as a result of this change in PTC system | 1) Full integrated testing between EMU and wayside cannot be conducted without PTC in place.  
|     | Delay of PTC may delay acceptance of EMUs.                                      | 2) Delay in EMU final design for PTC and potential PTC interfaces. Need to finalize braking system sequence priority. |
## Mitigation Monitoring and Reporting

<table>
<thead>
<tr>
<th>Mitigation Measure</th>
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<th>Status Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Construction</td>
<td>Post-Construction</td>
<td>Operation</td>
</tr>
<tr>
<td>AES-2a: Minimize OCS construction activity on residential and park areas outside the Caltrain ROW.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
<tr>
<td>AES-2b: Aesthetic treatments for OCS poles, TPFs in sensitive visual locations, and Overbridge Protection Barriers.</td>
<td>X</td>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td>AES-4a: Minimize spillover light during nighttime construction.</td>
<td>X</td>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td>AES-4b: Minimize light spillover at TPFs.</td>
<td>X</td>
<td></td>
<td>Upcoming</td>
</tr>
<tr>
<td>AQ-2a: Implement BAAQMD basic and additional construction mitigation measures to reduce construction-related dust.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
### Mitigation Monitoring and Reporting

<table>
<thead>
<tr>
<th>Mitigation Measure</th>
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</thead>
<tbody>
<tr>
<td>AQ-2b: Implement BAAQMD basic and additional construction mitigation measures to control construction-related ROG and NOX emissions.</td>
<td>X X</td>
<td>Ongoing</td>
<td>The Equipment Emissions Control Plan was submitted to the JPB and approved. The requirements in the Equipment Emissions Control Plan will be implemented throughout the construction period and documented in daily reports.</td>
</tr>
<tr>
<td>AQ-2c: Utilize clean diesel-powered equipment during construction to control construction-related ROG and NOX emissions.</td>
<td>X X</td>
<td>Ongoing</td>
<td>The Equipment Emissions Control Plan was submitted to the JPB and approved. The requirements in the Equipment Emissions Control Plan will be implemented throughout the construction period and documented in daily reports.</td>
</tr>
<tr>
<td>BIO-1a: Implement general biological impact avoidance measures.</td>
<td>X X</td>
<td>Ongoing</td>
<td>Worker Environmental Awareness Training is provided to all project-related personnel before they work on the project. All measures as described will be implemented throughout the construction period and documented in daily reports.</td>
</tr>
<tr>
<td>BIO-1b: Implement special-status plant species avoidance and revegetation measures.</td>
<td>X X X</td>
<td>Complete</td>
<td>Not applicable. Subsequent habitat assessment and avoidance of Communication Hill eliminated any potential to affect special-status plant species. The measure is not needed.</td>
</tr>
</tbody>
</table>
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</thead>
<tbody>
<tr>
<td><strong>BIO-1c: Implement California red-legged frog and San Francisco garter snake avoidance measures.</strong></td>
<td>X X</td>
<td>Ongoing</td>
<td>Pre-construction surveys are occurring no more than 7 days prior to the initiation of construction activities nearby/adjacent to potential habitat for CRLF and SFGS. The Wildlife Exclusion Fencing Plans for Segments 1 and 4 were submitted and approved by the wildlife agencies, and installation and monitoring of wildlife exclusion fencing is ongoing. No CRLF / SFGS or sign of each species has been observed to date on the Project.</td>
</tr>
<tr>
<td><strong>BIO-1d: Implement western pond turtle avoidance measures.</strong></td>
<td>X X</td>
<td>Ongoing</td>
<td>Pre-construction surveys are occurring no more than 7 days prior to the initiation of construction activities nearby/adjacent to potential habitat for WPT. No WPT or WPT sign have been observed to date on the Project.</td>
</tr>
<tr>
<td><strong>BIO-1e: Implement Townsend’s big-eared bat, pallid bat, hoary bat, and fringed myotis avoidance measures.</strong></td>
<td>X X</td>
<td>Ongoing</td>
<td>Pre-construction surveys are occurring no more than 7 days prior to the initiation of construction activities with the potential to disturb bats or their habitat. No special-status bats or sign have been observed to date on the Project.</td>
</tr>
<tr>
<td><strong>BIO-1f: Implement western burrowing owl avoidance measures.</strong></td>
<td>X X</td>
<td>Ongoing</td>
<td>Protocol surveys for Western Burrowing Owl have been conducted from April–July, in 2017, 2018, and 2019, at previously identified potentially suitable habitat locations. Note that all of these locations are in Construction Segment 4 (southern Santa Clara and San Jose). No Burrowing Owls have been observed during the surveys conducted to date. Survey reports for the 2017, 2018, and 2019 surveys have been submitted to the JPB for the project</td>
</tr>
</tbody>
</table>
### Mitigation Monitoring and Reporting

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<td>Post-Construction</td>
<td>Operation</td>
</tr>
<tr>
<td>BIO-1g: Implement northern harrier, white-tailed kite, American peregrine falcon, saltmarsh common yellowthroat, purple martin, and other nesting bird avoidance measures.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
<tr>
<td>BIO-1h: Conduct biological resource survey of future contractor-determined staging areas.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
<tr>
<td>BIO-1i: Minimize impacts on Monarch butterfly overwintering sites.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
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</tr>
<tr>
<td>BIO-1j: Avoid nesting birds and bats during vegetation maintenance.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIO-2: Implement serpentine bunchgrass avoidance and revegetation measures.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIO-3: Avoid or compensate for impacts on wetlands and waters.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIO-5: Implement Tree Avoidance, Minimization, and Replacement Plan.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BIO-6: Pay Santa Clara Valley Habitat Plan land cover fee (if necessary).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CUL-1a: Evaluate and minimize impacts on structural integrity of historic tunnels.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitigation Measure</td>
<td>Mitigation Timing</td>
<td>Status</td>
<td>Status Notes</td>
</tr>
<tr>
<td>--------------------</td>
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</tr>
<tr>
<td><strong>CUL-1b: Minimize impacts on historic decorative tunnel material.</strong></td>
<td>Pre-Construction</td>
<td>X</td>
<td>Upcoming</td>
</tr>
<tr>
<td><strong>CUL-1c: Install project facilities in a way that minimizes impacts on historic tunnel interiors.</strong></td>
<td>Pre-Construction</td>
<td>X</td>
<td>Upcoming</td>
</tr>
<tr>
<td><strong>CUL-1d: Implement design commitments at historic railroad stations</strong></td>
<td>Pre-Construction</td>
<td>X</td>
<td>Complete</td>
</tr>
<tr>
<td><strong>CUL-1e: Implement specific tree mitigation considerations at two potentially historic properties and landscape recordation, as necessary.</strong></td>
<td>Pre-Construction</td>
<td>X</td>
<td>Complete</td>
</tr>
</tbody>
</table>
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<tr>
<td></td>
<td>Post-Construction</td>
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</tr>
<tr>
<td></td>
<td>Operation</td>
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</tr>
</tbody>
</table>

### CUL-1f: Implement historic bridge and underpass design requirements.

- Status: Ongoing

This measure is being implemented as described during the design process and will be incorporated into the final design. The four bridges that are included in the MMRP are rail bridges crossing over another feature. Design of the OCS system is taking into account that there are requirements that restrict the design. Thus far, the designs for Construction Segments 2 & 4 are in process and designs are not yet complete. The D-B will forward to the Architectural Historian once complete.

### CUL-2a: Conduct an archaeological resource survey and/or monitoring of the removal of pavement or other obstructions to determine if historical resources under CEQA or unique archaeological resources under PRC 21083.2 are present.

- Status: Ongoing

Periodic inspections of ground surface areas along the alignment, in conjunction with cultural monitoring as-needed of project activities in culturally sensitive areas are ongoing. The Archaeological Final Report will be provided at the conclusion of construction activities.

### CUL-2b: Conduct exploratory trenching or coring of areas where subsurface project disturbance is planned in those areas with “high” or “very high” potential for buried site.

- Status: Ongoing

Exploratory trenching and subsurface testing of all potentially culturally sensitive areas occurred prior to the initiation of construction activities in those areas. The results will be included in the Archaeological Final Report. No cultural resources requiring the development of a treatment plan were observed. A Native American monitor has been present for all exploratory trenching and subsurface testing work.
Mitigation Monitoring and Reporting

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<td>Post-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction</td>
<td>Construction</td>
<td>Operation</td>
</tr>
<tr>
<td>CUL-2c: Conduct limited subsurface testing before performing ground-disturbing work within 50 meters of a known archaeological site.</td>
<td>X</td>
<td></td>
<td>Exploratory trenching and subsurface testing of all potentially culturally sensitive areas occurred prior to the initiation of construction activities in those areas. The results will be included in the Archaeological Final Report. No cultural resources requiring the development of a treatment plan were observed. A Native American monitor has been present for all exploratory trenching and subsurface testing work.</td>
</tr>
<tr>
<td>CUL-2d: Conduct exploratory trenching or coring of areas within the three zones of special sensitivity where subsurface project disturbance is planned.</td>
<td>X</td>
<td></td>
<td>Exploratory trenching and subsurface testing of all potentially culturally sensitive areas occurred prior to the initiation of construction activities in those areas. The results will be included in the Archaeological Final Report. No cultural resources requiring the development of a treatment plan were observed. A Native American monitor has been present for all exploratory trenching and subsurface testing work.</td>
</tr>
<tr>
<td>CUL-2e: Stop work if cultural resources are encountered during ground-disturbing activities.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
<tr>
<td>CUL-2f: Conduct archaeological monitoring of ground-disturbing activities in areas as determined by JPB and SHPO.</td>
<td></td>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
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<td>Pre-Construction</td>
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<td>Operation</td>
</tr>
<tr>
<td>CUL-3: Comply with state and county procedures for the treatment of human remains discoveries.</td>
<td>X</td>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td>EMF-2: Minimize EMI effects during final design, Monitor EMI effects during testing, commission and operations, and Remediate Substantial Disruption of Sensitive Electrical Equipment.</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>GEO-1: Perform a site-specific geotechnical study for traction power facilities.</td>
<td>X</td>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td>GEO-4a: Identification of expansive soils.</td>
<td>X</td>
<td></td>
<td>Ongoing</td>
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<tr>
<td>GEO-4b: Mitigation of expansive soils.</td>
<td>X</td>
<td>Ongoing</td>
<td>The design requirements indicated in the measure are being implemented through the final design by the D-B as described. Geotechnical studies are being conducted by Parikh under subcontract with PGH Wong. Studies and results are submitted to JPB as completed.</td>
</tr>
<tr>
<td>HAZ-2a: Conduct a Phase II Environmental Site Assessment prior to construction.</td>
<td>X</td>
<td>Complete</td>
<td>A Phase II Environmental Assessment was completed prior to construction by the JPB consultant, and the results were provided to BBI, and the required mitigation is being implemented prior to the initiation of construction activities.</td>
</tr>
<tr>
<td>HAZ-2b: Implement engineering controls and best management practices during construction.</td>
<td>X X</td>
<td>Ongoing</td>
<td>D-B field activities are being monitored daily for significant color changes or odors which may indicate contamination.</td>
</tr>
<tr>
<td>HYD-1: Implement construction dewatering treatment, if necessary.</td>
<td>X X</td>
<td>Ongoing</td>
<td>Facilities &amp; BMPs are in place to deal with this requirement should it arise in the OCS foundations.</td>
</tr>
<tr>
<td>HYD-4: Minimize floodplain impacts by minimizing new impervious areas for TPFs or relocating these facilities.</td>
<td>X</td>
<td>Ongoing</td>
<td>The design requirements indicated in the measure are being implemented through the final design as described. The TPFs in Construction Segments 2 &amp; 4 are currently in final design and design for TPFs in Construction Segments 1 &amp; 3 has begun. The design minimizes hardscape only to required structure foundations; yard areas are to receive a pervious material.</td>
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<tr>
<td>HYD-5: Provide for electrical safety at TPFs subject to periodic or potential flooding.</td>
<td>Pre-Construction: X, Post-Construction: X</td>
<td>Ongoing</td>
<td>The design requirements indicated in the measure are being implemented through the final design as described. The TPFs in Construction Segments 2 &amp; 4 are currently in final design and design for TPFs in Construction Segments 1 &amp; 3 has begun. The design plan currently raises the TPFs above the floodplain.</td>
</tr>
<tr>
<td>HYD-7: Implement sea level rise vulnerability assessment and adaptation plan.</td>
<td>Post-Construction: X</td>
<td>Ongoing</td>
<td>The JPB has initiated this measure and preparation of the sea level rise vulnerability assessment and adaptation plan is underway.</td>
</tr>
<tr>
<td>NOI-1a: Implement Construction Noise Control Plan.</td>
<td>Pre-Construction: X, Post-Construction: X</td>
<td>Ongoing</td>
<td>The Noise and Vibration Control Plan has been submitted and is being implemented. Field activity is monitored per the Plan. If allowable noise levels are near or exceed allowable noise levels, mitigation such as blankets are used from that point forward.</td>
</tr>
<tr>
<td>NOI-1b: Conduct site-specific acoustical analysis of ancillary facilities based on the final mechanical equipment and site design and implement noise control treatments where required.</td>
<td>Pre-Construction: X</td>
<td>Ongoing</td>
<td>The design requirements indicated in the measure are being implemented through the final design as described. PGH Wong has completed analysis and design and issued for JPB review.</td>
</tr>
<tr>
<td>NOI-2a: Implement Construction Vibration Control Plan.</td>
<td>Pre-Construction: X, Post-Construction: X</td>
<td>Ongoing</td>
<td>The Noise and Vibration Control Plan has been submitted and is being implemented. Field activity is monitored per the Plan.</td>
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<tbody>
<tr>
<td>PSU-8a: Provide continuous coordination with all utility providers.</td>
<td>X</td>
<td>Pre-Construction X</td>
<td>Ongoing</td>
</tr>
<tr>
<td>PSU-8b: Adjust OCS pole foundation locations.</td>
<td>X</td>
<td>Post-Construction Operation</td>
<td>Ongoing</td>
</tr>
<tr>
<td>PSU-8c: Schedule and notify users about potential service interruptions.</td>
<td>X</td>
<td>Operation</td>
<td>Ongoing</td>
</tr>
<tr>
<td>PSU-9: Require application of relevant construction mitigation measures to utility relocation and transmission line construction by others.</td>
<td>X</td>
<td>Operation</td>
<td>Ongoing</td>
</tr>
<tr>
<td>TRA-1a: Implement Construction Road Traffic Control Plan.</td>
<td>X</td>
<td>Operation</td>
<td>Ongoing</td>
</tr>
<tr>
<td>TRA-1c: Implement signal optimization and roadway geometry improvements at</td>
<td>X</td>
<td>Operation</td>
<td>Upcoming</td>
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<tr>
<td>impacted intersections for the 2020 Project Condition.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRA-2a: Implement construction railway disruption control plan.</td>
<td>X X</td>
<td>Ongoing</td>
<td>Minimization of railway disruption is being coordinated by the Site Specific Work Plan. A Construction Railway Disruption Control Plan was prepared to document the measures that are being implemented.</td>
</tr>
<tr>
<td>TRA-3b: In cooperation with the City and County of San Francisco, implement surface pedestrian facility improvements to address the Proposed Project’s additional pedestrian movements at and immediately adjacent to the San Francisco 4th and King Station.</td>
<td>X X X</td>
<td>Upcoming</td>
<td>This measure has not started.</td>
</tr>
<tr>
<td>TRA-4b: Continue to improve bicycle facilities at Caltrain stations and partner with bike share programs where available following guidance in Caltrain’s Bicycle Access and Parking Plan.</td>
<td></td>
<td>Ongoing</td>
<td>The JPB adopted the Caltrain Bicycle Parking Management Plan in November 2017, and staff have been working to implement the Plan’s recommendations to improve wayside bike parking facilities along the corridor. Staff have also been coordinating with local jurisdictions that have launched bikeshare pilot programs to safely site bicycles near Caltrain stations.</td>
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<tr>
<td><strong>NOI-CUMUL-1</strong>: Implement a phased program to reduce cumulative train noise along the Caltrain corridor as necessary to address future cumulative noise increases over FTA thresholds</td>
<td>Pre-Construction: X, Post-Construction: Upcoming</td>
<td>Upcoming</td>
<td>This measure will be implemented during project operation.</td>
</tr>
<tr>
<td><strong>NOI-CUMUL-2</strong>: Conduct project-level vibration analysis for Blended System operations and implement vibration reduction measures as necessary and appropriate for the Caltrain corridor</td>
<td>Pre-Construction: X, Post-Construction: In Progress, Operation: Complete</td>
<td>In Progress</td>
<td>CHSRA is conducting this analysis as part of the EIR/EIS for the San Francisco to San Jose section.</td>
</tr>
<tr>
<td><strong>TRA-CUMUL-1</strong>: Implement a phased program to provide traffic improvements to reduce traffic delays near at-grade crossings and Caltrain stations</td>
<td>Pre-Construction: X, Post-Construction: Upcoming</td>
<td>Upcoming</td>
<td>This measure will be implemented during project operation.</td>
</tr>
<tr>
<td><strong>TRA-CUMUL-2</strong>: Implement technical solution to allow electric trolley bus transit across 16th Street without OCS conflicts in cooperation with SFMTA.</td>
<td>Pre-Construction: X, Post-Construction: Complete</td>
<td>Complete</td>
<td>Not applicable. SFMTA has elected to not electrify the 16th Street crossing. This measure no longer applies.</td>
</tr>
<tr>
<td>Mitigation Measure <strong>TRA-CUMUL-3</strong>: As warranted, Caltrain and freight operators will partner to provide Plate H clearance as feasible between San Jose and Bayshore.</td>
<td>Pre-Construction: X, Post-Construction: Upcoming</td>
<td>Upcoming</td>
<td>This measure will be implemented during project operation.</td>
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<tbody>
<tr>
<td><strong>AES-2a</strong>: Minimize OCS construction activity on residential and park areas outside the Caltrain ROW.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>AES-2b</strong>: Aesthetic treatments for OCS poles, TPFs in sensitive visual locations, and Overbridge Protection Barriers.</td>
<td>X</td>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>AES-4a</strong>: Minimize spillover light during nighttime construction.</td>
<td>X</td>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>AES-4b</strong>: Minimize light spillover at TPFs.</td>
<td>X</td>
<td></td>
<td>Upcoming</td>
</tr>
<tr>
<td><strong>AQ-2a</strong>: Implement BAAQMD basic and additional construction mitigation measures to reduce construction-related dust.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
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<tr>
<td>AQ-2b: Implement BAAQMD basic and additional construction mitigation measures to</td>
<td>Pre-Construction:</td>
<td></td>
<td>The Equipment Emissions Control Plan was submitted to the JPB. The requirements in the Equipment Emissions Control Plan will be implemented throughout the construction period and documented in daily reports.</td>
</tr>
<tr>
<td>control construction-related ROG and NOX emissions.</td>
<td>X</td>
<td>X</td>
<td></td>
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<td></td>
<td>Post-Construction:</td>
<td>X</td>
<td></td>
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<td></td>
<td>Operation:</td>
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<td></td>
<td>Ongoing</td>
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<tr>
<td>AQ-2c: Utilize clean diesel-powered equipment during construction to control</td>
<td>Pre-Construction:</td>
<td>X</td>
<td>The Equipment Emissions Control Plan was submitted to the JPB. The requirements in the Equipment Emissions Control Plan will be implemented throughout the construction period and documented in daily reports.</td>
</tr>
<tr>
<td>construction-related ROG and NOX emissions.</td>
<td>X</td>
<td>X</td>
<td></td>
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<td></td>
<td>Post-Construction:</td>
<td>X</td>
<td></td>
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<td></td>
<td>Operation:</td>
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<td></td>
<td>Ongoing</td>
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</tr>
<tr>
<td>BIO-1a: Implement general biological impact avoidance measures.</td>
<td>Pre-Construction:</td>
<td>X</td>
<td>Worker Environmental Awareness Training is provided to all project-related personnel before they work on the project. All measures as described will be implemented throughout the construction period and documented in daily reports.</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
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<td></td>
<td>Post-Construction:</td>
<td>X</td>
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<td>Ongoing</td>
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<tr>
<td>BIO-1b: Implement special-status plant species avoidance and revegetation measures.</td>
<td>Pre-Construction:</td>
<td>X</td>
<td>Not applicable. Subsequent habitat assessment and avoidance of Communication Hill eliminated any potential to affect special-status plant species. The measure is not needed.</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
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<td></td>
<td>Post-Construction:</td>
<td>X</td>
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<td></td>
<td>Operation:</td>
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<td></td>
<td>Complete</td>
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<tr>
<td><strong>BIO-1c</strong>: Implement California red-legged frog and San Francisco garter snake avoidance measures.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>BIO-1d</strong>: Implement western pond turtle avoidance measures.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>BIO-1e</strong>: Implement Townsend’s big-eared bat, pallid bat, hoary bat, and fringed myotis avoidance measures.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
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<td>Operation</td>
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<tr>
<td>BIO-1f: Implement western burrowing owl avoidance measures.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
<tr>
<td>BIO-1g: Implement northern harrier, white-tailed kite, American peregrine falcon, saltmarsh common yellowthroat, purple martin, and other nesting bird avoidance measures.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
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<td>Pre-Construction</td>
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<tr>
<td>BIO-1h: Conduct biological resource survey of future contractor-determined staging areas.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
<tr>
<td>BIO-1i: Minimize impacts on Monarch butterfly overwintering sites.</td>
<td>X</td>
<td>X</td>
<td>Ongoing</td>
</tr>
<tr>
<td>BIO-1j: Avoid nesting birds and bats during vegetation maintenance.</td>
<td></td>
<td>X</td>
<td>Upcoming</td>
</tr>
<tr>
<td>BIO-2: Implement serpentine bunchgrass avoidance and revegetation measures.</td>
<td>X</td>
<td>X</td>
<td>Complete</td>
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<tr>
<td><strong>BIO-3: Avoid or compensate for impacts on wetlands and waters.</strong></td>
<td>Pre-Construction: X</td>
<td>Post-Construction: X</td>
<td>Complete</td>
</tr>
<tr>
<td><strong>BIO-5: Implement Tree Avoidance, Minimization, and Replacement Plan.</strong></td>
<td>Pre-Construction: X</td>
<td>Post-Construction: X</td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>BIO-6: Pay Santa Clara Valley Habitat Plan land cover fee (if necessary).</strong></td>
<td>Pre-Construction: X</td>
<td>Post-Construction: X</td>
<td>Complete</td>
</tr>
<tr>
<td><strong>CUL-1a: Evaluate and minimize impacts on structural integrity of historic tunnels.</strong></td>
<td>Pre-Construction: X</td>
<td>Post-Construction: X</td>
<td>Upcoming</td>
</tr>
<tr>
<td><strong>CUL-1b: Minimize impacts on historic decorative tunnel material.</strong></td>
<td>Pre-Construction: X</td>
<td>Post-Construction: X</td>
<td>Upcoming</td>
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<td></td>
<td>Operation</td>
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<tr>
<td>CUL-1c: Install project facilities in a way that minimizes impacts on historic tunnel interiors.</td>
<td>X</td>
<td>Upcoming</td>
<td>To be implemented prior to construction in tunnels.</td>
</tr>
<tr>
<td>CUL-1d: Implement design commitments at historic railroad stations</td>
<td>X</td>
<td>Complete</td>
<td>The Qualified Architectural Historian completed and submitted the HABS Level III documents to the JPB for all seven of the historic stations. Pole placement has been designed to minimize the visual impact to historic stations and all design changes are reviewed by the Environmental Compliance Lead to ensure the mitigation measure is being implemented as the design of the project progresses.</td>
</tr>
<tr>
<td>CUL-1e: Implement specific tree mitigation considerations at two potentially historic properties and landscape recordation, as necessary.</td>
<td>X</td>
<td>X</td>
<td>Complete</td>
</tr>
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<td>Post-Construction</td>
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<td></td>
<td>Operation</td>
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</tr>
<tr>
<td>CUL-1f: Implement historic bridge and underpass design requirements.</td>
<td>X</td>
<td>Ongoing</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>This measure is being implemented as described during the design process and will be incorporated into the final design. The four bridges that are included in the MMRP are rail bridges crossing over another feature. Design of the OCS system is taking into account that there are requirements that restrict the design. Thus far, the designs for Construction Segments 2 &amp; 4 are in process and designs are not yet complete. The D-B will forward to the Architectural Historian once complete.</td>
</tr>
<tr>
<td>CUL-2a: Conduct an archaeological resource survey and/or monitoring of the removal of pavement or other obstructions to determine if historical resources under CEQA or unique archaeological resources under PRC 21083.2 are present.</td>
<td>X</td>
<td>Ongoing</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Periodic inspections of ground surface areas along the alignment, in conjunction with cultural monitoring as-needed of project activities in culturally sensitive areas are ongoing. The Archaeological Final Report will be provided at the conclusion of construction activities.</td>
</tr>
<tr>
<td>CUL-2b: Conduct exploratory trenching or coring of areas where subsurface project disturbance is planned in those areas with “high” or “very high” potential for buried site.</td>
<td>X</td>
<td>Ongoing</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Exploratory trenching and subsurface testing of all potentially culturally sensitive areas occurred prior to the initiation of construction activities in those areas. The results will be included in the Archaeological Final Report. No cultural resources requiring the development of a treatment plan were observed. A Native American monitor has been present for all exploratory trenching and subsurface testing work.</td>
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<tr>
<td><strong>CUL-2c:</strong> Conduct limited subsurface testing before performing ground-disturbing work within 50 meters of a known archaeological site.</td>
<td>X</td>
<td>Ongoing</td>
<td>Exploratory trenching and subsurface testing of all potentially culturally sensitive areas occurred prior to the initiation of construction activities in those areas. The results will be included in the Archaeological Final Report. No cultural resources requiring the development of a treatment plan were observed. A Native American monitor has been present for all exploratory trenching and subsurface testing work.</td>
</tr>
<tr>
<td><strong>CUL-2d:</strong> Conduct exploratory trenching or coring of areas within the three zones of special sensitivity where subsurface project disturbance is planned.</td>
<td>X</td>
<td>Ongoing</td>
<td>Exploratory trenching and subsurface testing of all potentially culturally sensitive areas occurred prior to the initiation of construction activities in those areas. The results will be included in the Archaeological Final Report. No cultural resources requiring the development of a treatment plan were observed. A Native American monitor has been present for all exploratory trenching and subsurface testing work.</td>
</tr>
<tr>
<td><strong>CUL-2e:</strong> Stop work if cultural resources are encountered during ground-disturbing activities.</td>
<td>X, X</td>
<td>Ongoing</td>
<td>No prehistoric or historic-period cultural materials have been observed during cultural monitoring.</td>
</tr>
<tr>
<td><strong>CUL-2f:</strong> Conduct archaeological monitoring of ground-disturbing activities in areas as determined by JPB and SHPO.</td>
<td>X</td>
<td>Ongoing</td>
<td>Cultural monitoring as-needed of project activities in culturally sensitive areas is ongoing. The Archaeological Final Report will be provided at the conclusion of construction activities.</td>
</tr>
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<tr>
<td>CUL-3: Comply with state and county procedures for the treatment of human remains discoveries.</td>
<td>Pre-Construction: X</td>
<td>Post-Construction: X</td>
<td>Ongoing</td>
</tr>
<tr>
<td>EMF-2: Minimize EMI effects during final design, Monitor EMI effects during testing, commission and operations, and Remediate Substantial Disruption of Sensitive Electrical Equipment.</td>
<td>Pre-Construction: X</td>
<td>Post-Construction: X</td>
<td>Ongoing</td>
</tr>
<tr>
<td>GEO-1: Perform a site-specific geotechnical study for traction power facilities.</td>
<td>Pre-Construction: X</td>
<td></td>
<td>Ongoing</td>
</tr>
<tr>
<td>GEO-4a: Identification of expansive soils.</td>
<td>Pre-Construction: X</td>
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<td>Ongoing</td>
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<tr>
<td>GEO-4b: Mitigation of expansive soils.</td>
<td>X</td>
<td>Ongoing</td>
<td>The design requirements indicated in the measure are being implemented through the final design as described. Geotechnical studies and results are submitted to JPB as completed.</td>
</tr>
<tr>
<td>HAZ-2a: Conduct a Phase II Environmental Site Assessment prior to construction.</td>
<td>X</td>
<td>Complete</td>
<td>A Phase II Environmental Assessment was completed prior to construction by the JPB consultant, and the results were provided to BBI, and the required mitigation is being implemented prior to the initiation of construction activities.</td>
</tr>
<tr>
<td>HAZ-2b: Implement engineering controls and best management practices during construction.</td>
<td>X</td>
<td>Ongoing</td>
<td>Field activities are being monitored daily for significant color changes or odors which may indicate contamination. In addition, an assessment of two existing subsurface pipes by a certified Asbestos Consultant occurred during this reporting period, and a specification describing the methods for removal and disposal is currently in progress.</td>
</tr>
<tr>
<td>HYD-1: Implement construction dewatering treatment, if necessary.</td>
<td>X</td>
<td>Ongoing</td>
<td>Facilities &amp; BMPs are in place to deal with this requirement should it arise in the OCS foundations.</td>
</tr>
<tr>
<td>HYD-4: Minimize floodplain impacts by minimizing new impervious areas for TPFs or relocating these facilities.</td>
<td>X</td>
<td>Ongoing</td>
<td>The design requirements indicated in the measure are being implemented through the final design as described. The TPFs in Construction Segments 2 &amp; 4 are currently in final design and design for TPFs in Construction Segments 1 &amp; 3 has begun. The design minimizes</td>
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<td>Operation</td>
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<tr>
<td>HYD-5: Provide for electrical safety at TPFs subject to periodic or potential flooding.</td>
<td>X</td>
<td></td>
<td>Ongoing</td>
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<tr>
<td>NOI-2a: Implement Construction Vibration Control Plan.</td>
<td>X X</td>
<td>Ongoing</td>
<td>The Noise and Vibration Control Plan has been submitted and is being implemented. Field activity is monitored per the Plan.</td>
</tr>
<tr>
<td>PSU-8a: Provide continuous coordination with all utility providers.</td>
<td>X X</td>
<td>Ongoing</td>
<td>The design requirements indicated in the measure will be implemented through the final design as described. Coordination with utility providers is ongoing and there have not been any service interruptions thus far.</td>
</tr>
<tr>
<td>PSU-8b: Adjust OCS pole foundation locations.</td>
<td>X</td>
<td>Ongoing</td>
<td>The design requirements indicated in the measure are being implemented through the final design as described.</td>
</tr>
<tr>
<td>PSU-8c: Schedule and notify users about potential service interruptions.</td>
<td>X X</td>
<td>Ongoing</td>
<td>The design requirements indicated in the measure are being implemented through the final design as described. There have not been any service interruptions thus far.</td>
</tr>
<tr>
<td>PSU-9: Require application of relevant construction mitigation measures to utility relocation and transmission line construction by others.</td>
<td>X X</td>
<td>Ongoing</td>
<td>JPB has initiated coordination with PG&amp;E regarding transmission line construction. PG&amp;E is currently raising overcrossing lines in Segment 2.</td>
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<td><strong>TRA-1a: Implement Construction Road Traffic Control Plan.</strong></td>
<td>X X</td>
<td>Ongoing</td>
<td>The D-B has begun traffic control design and permit applications with cities in Segments 2 and 4. Designs have been completed and approved for all cross-over bridges in Segments 2 and 4.</td>
</tr>
<tr>
<td><strong>TRA-1c: Implement signal optimization and roadway geometry improvements at impacted intersections for the 2020 Project Condition.</strong></td>
<td>X X</td>
<td>Upcoming</td>
<td>This measure has not started</td>
</tr>
<tr>
<td><strong>TRA-2a: Implement construction railway disruption control plan.</strong></td>
<td>X X</td>
<td>Ongoing</td>
<td>Minimization of railway disruption is being coordinated by the Site Specific Work Plan. A Construction Railway Disruption Control Plan was prepared to document the measures that are being implemented.</td>
</tr>
<tr>
<td><strong>TRA-3b: In cooperation with the City and County of San Francisco, implement surface pedestrian facility improvements to address the Proposed Project’s additional pedestrian movements at and immediately adjacent to the San Francisco 4th and King Station.</strong></td>
<td>X X X</td>
<td>Upcoming</td>
<td>This measure has not started</td>
</tr>
<tr>
<td><strong>TRA-4b: Continue to improve bicycle facilities at Caltrain stations and partner with bike share programs where available following guidance in</strong></td>
<td>X</td>
<td>Ongoing</td>
<td>The JPB adopted the Caltrain Bicycle Parking Management Plan in November 2017, and staff have been working to implement the Plan's recommendations to improve wayside bike parking facilities along</td>
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<tr>
<td>Caltrain's Bicycle Access and Parking Plan.</td>
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<tr>
<td>NOI-CUMUL-1: Implement a phased program to reduce cumulative train noise along the Caltrain corridor as necessary to address future cumulative noise increases over FTA thresholds</td>
<td>X Upcoming</td>
<td></td>
<td>This measure will be implemented during project operation.</td>
</tr>
<tr>
<td>NOI-CUMUL-2: Conduct project-level vibration analysis for Blended System operations and implement vibration reduction measures as necessary and appropriate for the Caltrain corridor</td>
<td>X In Progress</td>
<td></td>
<td>CHSRA is conducting this analysis as part of the EIR/EIS for the San Francisco to San Jose section.</td>
</tr>
<tr>
<td>TRA-CUMUL-1: Implement a phased program to provide traffic improvements to reduce traffic delays near at-grade crossings and Caltrain stations</td>
<td>X Upcoming</td>
<td></td>
<td>This measure will be implemented during project operation.</td>
</tr>
<tr>
<td>TRA-CUMUL-2: Implement technical solution to allow electric trolley bus transit across 16th Street without OCS conflicts in cooperation with SFMTA.</td>
<td>X Complete</td>
<td></td>
<td>Not applicable. SFMTA has elected to not electrify the 16th Street crossing. This measure no longer applies.</td>
</tr>
<tr>
<td>Mitigation Measure TRA-CUMUL-3: As warranted, Caltrain and freight operators will partner to provide Plate H clearance</td>
<td>X Upcoming</td>
<td></td>
<td>This measure will be implemented during project operation.</td>
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<td>as feasible between San Jose and Bayshore.</td>
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