Caltrain Modernization Program

Peninsula Corridor Electrification Project (PCEP)

Executive Monthly Progress Report

March 31, 2022

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

The Peninsula Corridor Electrification Project (PCEP) will upgrade 51 miles of diesel service to electrified service from San Francisco to San Jose (Tamien Station). The PCEP scope of work includes design and construction of an overhead contact system, traction power facilities, modification of the existing signaling and grade crossing protection system to make it compatible with the electrified railroad, substation improvements at Pacific Gas and Electric (PG&E) substations, and modifications at existing tunnels and Caltrain's maintenance facility. It also includes the design, manufacturing, assembly, testing, and delivery of the Electric Multiple Units (EMUs).

Caltrain rebaselined the program budget and schedule in December of 2021. Caltrain completed a thorough assessment of all aspects of the program including cost, schedule, risks and organization. Caltrain is committed to deliver PCEP and achieve revenue service in September of 2024.

1.2 Program Cost and Budget

On December 6, 2021, the JPB adopted a new PCEP program budget of $2,442,690,697. As of March 2022, the project is on budget:

- The current project total cost at completion (EAC) is the same as Board adopted budget of $2.44 billion.
- As of March 2022, a total of $375,960 to-date drawdown occurred to the Shared Risk Pool of $50 million.
- As of March 2022, $0 was drawn from project contingency of $40 million.
- No new award of the Project incentive pool of $18.5 million.

1.3 Program Progress and Schedule

As of March 31, 2022, the overall project completion is 65%. The current program schedule is still on track with PCEP's substantial completion date of April 2024 and Revenue Service by September 2024.

1.4 Change Management Board (CMB)

In March 2022, the following change order was submitted for CMB approval:

- CMB approved Proven contract Change Orders which settle all outstanding claims and time extension for Tunnel and CEMOF

1.5 This Month's Accomplishments

The project team has completed the following notable activities for the month of March 2022:

- Continued to bring on experienced, qualified resources to fill key management positions for PCEP delivery, including a seasoned veteran with over 35 years of transit experience.
- Received first two EMU Trainsets on March 18, 2022.
- Continued progressing the Single-Phase Study for Traction Power Substation 2.
- Continued finalizing test documents that comply with PG&E interconnect

handbook for PG&E review.
- Continued weekly project status meetings with CMB members.
- Competed and submitted FTA and HSR Recovery/Remediation Plan.
- Continued Segment 4 Milestone 1 completion joint walk-through and punch list.
- PCEP field work was on hold from March 10, 2022 through March 27, 2022 due to railroad incident; project resumed field work on March 28, 2022.
- Performed Safety standdown; all Contractors and PCEP team were trained on Roadway Worker Protection (RWP) rules and procedural changes designed to enhance safety.
- Evaluated the potential impact to PCEP schedule due to the suspension of work due to the incident on March 10, 2022.
- Continued to provide PCEP progress update to funding partners leadership, elected officials, citizens and business community.
- Complete EMU production schedule rebaseline effort. The 14th trainset is scheduled to be on-site by fall of 2023, no impact to Revenue Service.

1.6 Upcoming work

For the next six months, the PCEP team has set additional goals as described below:

- Complete Single-Phase Study for TPS 2 by May 31, 2022.
- Segment 2 phase 3&4 major signal and grade crossing system cutover was moved from March to May and plan to complete first major signal system cutover by May 23, 2022.
- Update Program Management Plan (PMP) by June 30, 2022.
- Energize Segment 4 and start testing EMU Trainset 3 by July 31, 2022.
- Commence joint task force quality audit effort with focus on TPS.
- Continue pursuing federal and local grants to close the funding gap.

The PCEP Project is currently on budget and on time for achieving Revenue Service in September of 2024.

1.7 Critical Items

As of March 2022, Project top critical items and related actions are highlighted below.

Table 1-1. Critical Issues and Actions

Critical Issues	Actions
Timely completion of Single-Phase Study and execution of PG&E Transmission Operating Load Agreement (TOLA) will impact Segment 4 energization to OCS/TPS Commissioning and EMU Testing	• The technical team meets with PG&E weekly to finalize the number of cases required to complete the Single-Phase Study. • Additional resources have been brought in to expedite Single-Phase Study effort. • Caltrain leadership met with PG&E representatives to outline the path forward. Both management teams meet weekly to track the status. • Caltrain has received and reviewed TOLA agreement.
Timely completion of Segment 2 Signal/2SC cutover	• Perform comprehensive cutover planning; develop and track dashboard for each cutover, including design submittal, duct bank completion, flagger needs. • Work closely with Rail Operations to maximize track access. • Advance notification to the public on train schedule service changes for weekend shutdown.
Funding of $410 million program gap	• Special task force is in place to identify federal and state grant opportunities to pursue. • Targeted advocacy is ongoing. • Prepare earmarks grant scope and application.
Equipment procured and installed (e.g., wayside cubical batteries and TPS cables) are not in compliance with contractual requirement or not in compliance with issue for construction (IFC) design	• Assigned focus group including technical lead and delivery director for issue resolution. • Commence joint task force (designer, builder and PCEP Team) for quality audit with focus on wayside equipment and TPS. • Timely address design change notice and design variance requests. • Perform root cause analysis and correction actions to avoid future mishaps.
Project skilled resources (Contractor and Caltrain) availability	• Design-builder brought experienced project director, construction manager, systems Engineer from UK to the project. More Traction Power technical support is on its way. • Caltrain continues reaching out to the industry to interview and secure key resources for testing, Rail Activation and project acceptance. • Develop specialized staff plan for operations and maintenance.

2.0 PROGRAM SCHEDULE

2.1 Introduction

PCEP has a Master Program Schedule (MPS) which illustrates the timeline of major elements of the PCEP program depicted in **Figure 2-1**.

The Electrification Substantial Completion Date is forecast by April 1, 2024 based on design-builder March progress schedule. The Electrification RSD date remains on September 26, 2024, with 6 months schedule contingency.

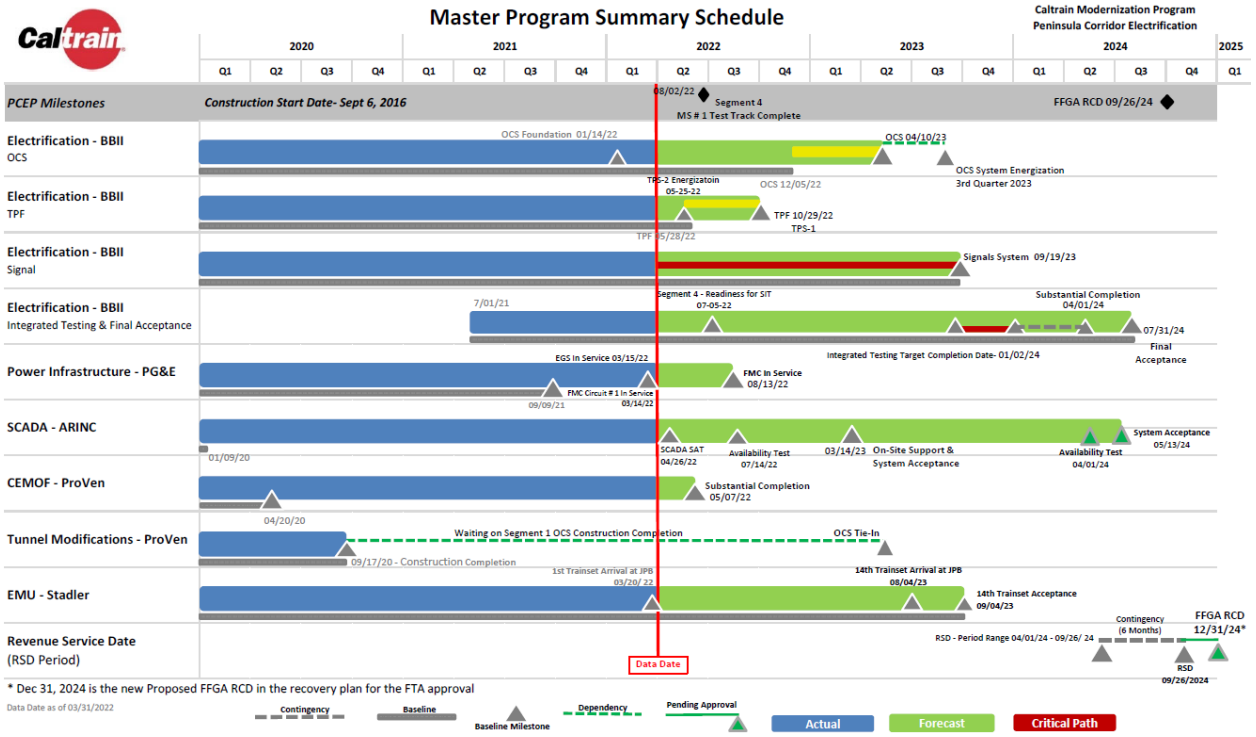


Figure 2-1. Master Program Summary Schedule

2.2 Critical Path

The current critical path for PCEP continues to run through the design, installation, and testing of the signal and crossing modifications required to make the signal system compatible with the electrified railroad, followed by integrated testing and cutover.

As of March 31, 2022, the overall delay to the critical path is 0 days compared to the project re-baseline schedule.

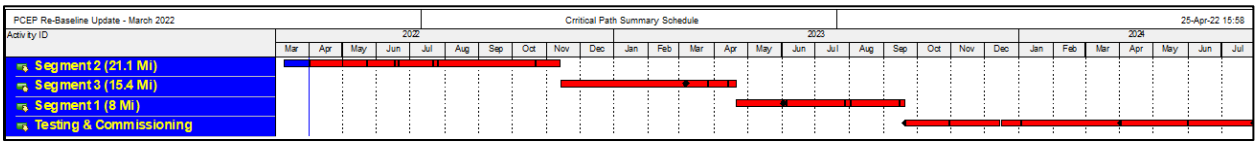


Figure 2-2. PCEP Critical Path Summary Schedule

2.3 Schedule Issues

Issues that may impact critical path or major milestones are identified in the table below as of March 2022.

Table 2-1. Schedule issues and actions

Issues	Actions
Construction work stoppage safety stand down due to the track safety incident which occurred on March 10, 2022.	• Schedule workshop held March 30, 2022 to assess schedule impact. • Schedule recovery recommendation and actions developed by JPB/BBII to mitigate schedule impact. • Complete segment 2 cutovers by mid-November to mitigate critical path impact.
OCS installation delay due to low productivity and the project OCS work was on hold from March 3/10 to 3/28 during the safety stand down.	• Additional BBII OCS crew training for regulation and variance in the OCS design / installation due to re-design & accommodations to resolve foundation DSC issues. • Hiring additional BBII OCS staff members to prevent schedule slippage and help in future installation planning.
Late completion of Single-Phase study and TPS 2 testing including TPS2 battery enclosure continue to impact Segment 4 energization and milestone 1 completion.	• The technical team meets with PG&E weekly to finalize the number of cases required to complete the Single-Phase Study. • Additional resources are brought in to expedite Single-Phase Study effort. • Caltrain leadership meet with PG&E management team weekly to outline the path forward. • Review and approve all test procedures timely and complete remaining TPS acceptance testing to support PG&E TPS energization.

2.4 Contract Milestones

Table 2-2. Electrification Design-Build Contract Milestones

Milestone	Re- Baseline Dates	Current Forecast	Milestone Variance
	April 15, 2022	August 5, 2022	-112
Substantial Completion	April 1, 2024	April 1, 2024	0
Final Acceptance	July 31, 2024	July 31, 2024	0

Late completion TPS 2 single phase study and TPS testing have caused delay of Segment 4 energization which impact Segment 4 substantial completion (Milestone 1). March 10 field work shutdown also contributes delay of Segment 4 OCS/TPS construction completion. There is no impact to full alignment substantial completion of April 1, 2024, and Revenue Service Date of September 2024.

3.0 COST AND BUDGET

3.1 Introduction

This section presents current program cost and budget. On December 6, 2021, the JPB adopted a new Program budget of $2.44 billion. Table 3-1 depicts a summary level of program budget, costs, and estimate at completion based on the latest update of the Electrification and EMU projects as of March 31, 2022.

3.2 Program Budget and Cost

Table 3-1. Budget Summary by Project

Description of Work	Re-Baseline Current Budget (A)[1]	Cost This Month (B[2]	Cost To Date (C)[3]	Estimate To Complete (D)	Estimate At Completion (E) = (C) + (D)	Variance at Completion (F) = (A) – (E)
Electrification	$1,749,139,438	$12,159,512	$1,280,937,198	$468,202,240	$1,749,139,438	$0
EMU	$693,551,258	$21,482,759	$360,841,234	$332,710,024	$693,551,258	$0
PCEP TOTAL	**$2,442,690,697**	**$33,642,271**	**$1,641,778,432**	**$800,912,264**	**$2,442,690,697**	**$0**

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

Table 3-2 depicts program budget, costs, and estimate at completion summarized by major elements of work. This budget table provides additional detail for the program and is broken down by major contracts for Electrification and EMU, minor contracts, real estate, utilities, project management oversight and other indirect support costs.

Table 3-2. Budget Summary by Major Elements

Description of Work	Re-Baseline Budget	Cost This Month	Cost To Date	Estimate To Complete	Estimate At Completion
Electrification	$1,097,149,881	$7,671,825	$739,333,567	$357,816,314	$1,097,149,881
EMU Procurement	$556,072,601	$19,541,920	$287,690,365	$268,514,601	$556,204,966
Minor Construction Contracts (SSF, [2]5th Grade, Tunnel, CEMOF, SCADA, Non-BBI OCS)	$67,055,072	$620,951	$57,244,406	$9,810,666	$67,055,072
Real Estate Acquisition & Support	$34,914,177	-$5,525	$23,573,002	$11,341,175	$34,914,177
PG&E, Utilities	$132,088,995	$459,789	$191,686,187	-$59,597,193	$132,088,995
Management Oversight & Support	$312,699,697	$2,234,948	$233,908,990	$78,790,707	$312,699,697
TASI Support	$114,488,767	$1,617,504	$74,788,466	$39,700,301	$114,488,767
Finance Charges	$9,898,638	$51,825	$7,902,802	$1,995,836	$9,898,638
Insurance	$6,581,851	$0	$4,581,851	$2,000,000	$6,581,851
Other Required Projects & Services	$9,084,176	$40,964	$2,495,823	$6,588,353	$9,084,176
Environmental Mitigation	$14,438,866	$64,824	$1,205,404	$13,233,462	$14,438,866
Caltrain Capital Overhead (ICAP)	$48,217,887	$1,343,246	$17,367,569	$30,850,319	$48,217,887
Contingency	$40,000,089	$0	$0	$39,867,724	$39,867,724
Total	**$2,442,690,697**	**$33,642,271**	**$1,641,778,432**	**$800,912,264**	**$2,442,690,697**

3.3 Program Shared Risk Pool and Contingency

Caltrain and Balfour Beatty Infrastructure, Inc. (BBII) continue implementing new mechanisms to ensure a collaborative approach to Project delivery. The management team meets every week to review the issues log focusing on risk mitigation and issues resolution.

As part of global settlement, a shared risk pool of $50 million was established to manage risks and mitigation proactively and collaboratively with the design-build contractor. Table 3-3 shows the current shared risk drawdown for the current month and to-date as well as the remaining balance of the shared Risk Pool by Risk Category. Any shared risk items that are above $200,000 require Change Management Board (CMB) approval.

Table 3-3. Shared Risk Pool Status as of March 2022

Risk ID	Risk Description	Risk Amount	Current Month	Executed to Date	Remaining Balance
1	Permanent Power Availability	$268,572	$114,495	$114,495	$154,077
2	Different Site Condition for OCS Foundation	$3,500,000	$101,112	$101,112	$3,398,888
3	Different Site Condition for Duct bank	$2,800,000	$0	$0	$2,800,000
4	Condition of existing Fiber backbone infrastructure	$3,150,000	$0	$0	$3,150,000
5	Availability of TASI Resource	$5,777,820	$0	$0	$5,777,820
6	Signal Cutover access and work window	$5,607,150	$0	$0	$5,607,150
7	Condition of existing signal system	$538,572	$0	$0	$538,572
8	EMI Nonconformance by EMU Vendor	$750,000	$0	$0	$750,000
9	Reed Street Cutover	$90,000	$0	$0	$90,000
10	Availability of low voltage power for cutover testing	$1,120,000	$0	$0	$1,120,000
11	Third party Permits	$150,000	$0	$0	$150,000
12	SCADA integration for the entire alignment	$159,524	$0	$0	$159,524
13	Tunnel OCS Compatibility	$167,500	$0	$0	$167,500
14	Supply chain issue due to COVID 19	$300,000	$28,923	$28,923	$271,077
15	End to end Systems integration commissioning	$2,100,000	$0	$0	$2,100,000
16	Existing Caltrain Operating systems interface and integration	$1,400,000	$0	$0	$1,400,000
17	Third party Approval	$150,000	$0	$0	$150,000
18	Impact from Caltrain other capital or third-party projects	$2,166,683	$0	$0	$2,166,683
19	Track access delay for BBII Construction	$1,800,000	$0	$0	$1,800,000
20	Additional light Maintenance and Protection Needs	$280,000	$0	$0	$280,000
21	Crossing Protection	$220,000	$35,560	$60,418	$159,582
22	Power facilities	$500,000	$0	$0	$500,000
23	NCR's	$0	$0	$0	$0
24	Potholing	$1,700,000	$0	$71,012	$1,628,988
25	Pre-Revenue Service Operational Testing	$250,000	$0	$0	$250,000
26	TRO Contingency	$3,000,000	$0	$0	$3,000,000
27	Contingency	$12,000,000	$0	$0	$12,000,000
NA	Unidentified	$54,179	$0	$0	$54,179
	BBII Risk Pool Total	**$50,000,000**	**$280,090**	**$375,960**	**$49,624,040**

In addition to the established Risk Pool with BBII, the Re-Baseline Budget includes a program contingency of $40 million to cover non-BBII potential changes and unknowns. Table 3-4 provides a detailed status of approved transfers from contingency due to executed Contract Change Orders and approved Budget Transfers.

Table 3-4. Program Contingency Drawdown Balance

Transfer	Description	Contingency
Project Contingency	Previously Reported Balance	**$40,000,089**
	No Changes This Month	$0
	PROJECT CONTINGENCY REMAINING BALANCE	**$40,000,089**

3.4 Electrification Design Builder Contract Incentives

The Global Settlement with BBII also includes incentives based on Milestone completions and remaining contract incentives. Table 3-5 provides a status of Design-Build Contractor incentives Budgeted, Awarded, and remaining Balance.

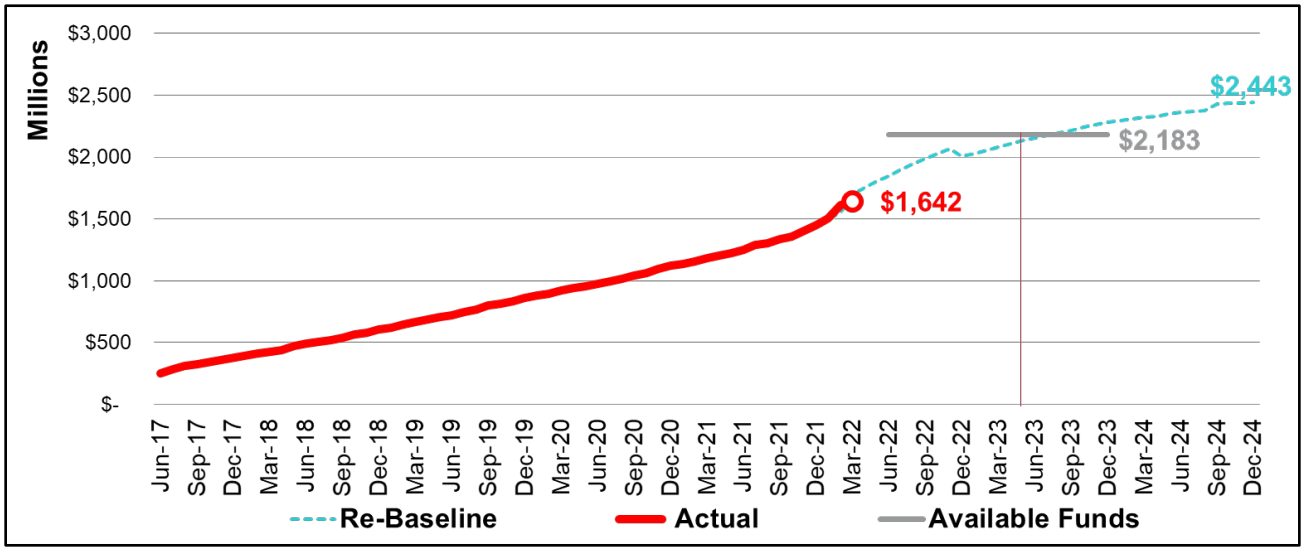
Table 3-5. BBII Incentives

Incentives	Budgeted	Awarded	Balance
Contract Incentive:			
Quality	$1,250,000	$1,000,000	$250,000
Safety	$2,500,000	$875,000	$1,625,000
Community Outreach	$2,500,000	$1,750,000	$750,000
DBE	$900,000	$0	$900,000
Total Contract Incentive	**$7,150,000**	**$3,625,000**	**$3,525,000**
Milestone Incentive:			
Early Signal and Crossing Cutover	$4,000,000	$0	$4,000,000
Early Project Substantial Completion (NTE)	$8,000,000	$0	$8,000,000
Early Revenue Service	$3,000,000	$0	$3,000,000
Total Milestone Incentive	**$15,000,000**		**$15,000,000**

3.5 Program Cash Flow and Funding

The remaining program expenditures are cash flowed in Figure 3-1 to illustrate by July 2023 additional funding will be needed to complete the program.

Figure 3.1 Expenditure – Funding Cash Flow



3.6 Issues

Table 3-6. Cost and Funding issues identified, and actions taken for March 2022

Issues	Actions
Additional funding setup for $410M Funding Gap.	• Actively pursuing additional State and Federal funding sources. • Dedicated task force has been established at the executive level. • Prepare earmarks grant scope and application for April submission.

4.0 CHANGE MANAGEMENT

4.1 Introduction

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

4.2 Change Orders

4.2.1 Executed Change Orders

The following change orders were issued in March 2022:

- Adjustment of the Stadler production schedule and payment schedule to account for excusable delays associated with COVID. This is a $0 change order.
- Proven Contract Settlement for CEMOF and Tunnel Contract in the amount of $6.5 million which was approved by CMB.

4.2.2 Pending Change Order

- Stadler TTCI EMU Test utility Cost of $482,364.71. The justification memo was submitted for CMB approval in April 2022.

4.2.3 Upcoming Change Order

- Negotiation of ARINC Office SCADA change order for time extension and additional field points change.

4.3 Issues

Table 4-1. Change Management issues identified and actions taken for March 2022

Issues	Actions
Proven Claims Negotiation - Complete	• A dedicated negotiation team is assigned to settle with Tunnel and CEMOF Contractor, including resolving outstanding change orders and contract completion. JPB approval of settlement with Proven in the amount of $6.5 million is scheduled on April 7, 2022.
ARINC Contract Time Extension	• Discussions were held with ARINC management teamto confirm the site support period to align the new baseline schedule, including a 1,000-hour availability test to be performed when the system is in production for the entire alignment. Team has finalized the scope of work, and the proposal request has been sent to ARINC.
Segment 4 Maintenance Option in the existing BBII Contract was never exercised. Maintenance of OCS/TPS for segment 4 will be needed post segment 4 substantial completion once Caltrain is using it for EMU testing under 25kV.	• Prepare Scope of work and define segment 4 maintenance needs. • Define EMU testing and burn in work schedule. • Evaluate procurement alternatives for maintenance work • Seek a proposal from BBII for the maintenance option as existed in the current Contract. • Evaluate the resource and price proposal. • Execute segment 4 maintenance option.