



Caltrain Modernization Program Peninsula Corridor Electrification Project (PCEP)



Executive Monthly Progress Report

October 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 completed a thorough assessment of all aspects of the program including cost, schedule, risks and organization after the global settlement in 2021. Caltrain re-baselined the program budget and schedule in December of 2021. 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 October 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 October 2022, a total of \$2.89M has been drawn down from the Shared Risk Pool of \$50 million. In October 2022, \$0.03M was drawn from the Shared Risk Pool.
- As of October 2022, a total of \$1.37M has been drawn from the project contingency of \$40 million. In October 2022, \$0.20M was drawn from project contingency.
- As of October 2022, no new awards have been made from the Project incentive pool of \$18.5 million.

1.3 Program Progress and Schedule

As of October 31, 2022, the overall project completion is 77.35%. The current program schedule is projecting a PCEP substantial completion date of April 2024 and Revenue Service by September 2024.

1.4 Change Management Board (CMB)

In October 2022, no change orders were brought to CMB for approval.

1.5 This Month's Accomplishments

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

- Finalized Segment 4 energized rail isolation and protection procedure.
- Issued updated Site Specific Work Plan (SSWP) that includes 25kV isolation and protection request.
- Held Executive Partnering session with BBII, Rail Operations and TASI.
- Continued TPS1 Single Phase Study for Line 1 and Line 2.
- Continued safety special task force working group, including TASI, Rail

Operations and PCEP to address communications, process and procedure improvements.

- Continued to recruit experienced, qualified resources to fill key positions for PCEP delivery. As of October 2022, the following positions were filled: Lead Scheduler and a Close-out Manager.
- Performed regression tests for previous 2SC cutover location application logic update.
- Completed Segment 2 SSF cutover.
- Commenced installation and pretesting activities for Segment 2 at Menlo Park, Redwood City, and Palo Alto in early December with Rail Operation and Rail Planning.
- Continued providing PCEP progress updates to funding partners, leadership, elected officials, citizens, and business community. The funding task force is actively pursuing TIRCP grant opportunity.
- Continued Rail Activation effort on path to energization for Segment 4 and CEMOF.
- Finalized Emergency Preparedness Plan (EPREP) and Standard Operating Procedures (SOPs) updates for electrified operations with TASI and Rail Operations.
- Commenced readiness review for Segment 4 system integration testing and energization with Design-Builder.
- Continued track access and RWIC workshops with BBII, Rail Operations and TASI.
- Continued 25kV in-depth OCS awareness training for all TASI staff and tenant railroad trainers prior to full Segment 4 energization.
- Completed OCS Segment 4 Sectionalization Testing.

1.6 Upcoming work

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

- Start implementing energized rail isolation and protection procedure.
- Perform Emergency Preparedness Plan (EPREP) rehearsal and finalize new timetables.
- Complete 25kV in-depth OCS awareness training for all TASI staff and tenant railroad trainers prior to full Segment 4 energization.
- Continue to hold CMB and PCEP partnering sessions and finalize procedures for the implementation of the Configuration Management Board from the Funding Partners Oversight Protocol.
- Continue to work with PG&E on the interconnect construction cost reimbursement timeline.
- Continue to hold Executive and Project Team Partnering sessions.
- Finalize Program Management Plan (PMP) and Quality Management Plan (QMP).
- Perform TPS2 short circuit testing.
- Energize Drill track to enable EMU re-commissioning and PTC testing.
- Continue pursuing federal and local grants to close the funding gap.
- Hold Monthly CMB meeting for program status and change order approval.
- Continue 2SC application logic update for previous 2SC cutover locations.

- Complete last major Segment 2 cutover at Ralston and Mayfield in December.
- Complete Segment 4 mainline live runs and full energization.
- Review Path for Completion plan that requires more track access and work windows on weekends to maximize productivity for the remaining infrastructure, signal cutover, and testing.

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

1.7 Critical Items

As of October 2022, the top critical items and related actions are highlighted below.

Table 1-1. Critical Issues and Actions

Critical Issues	Actions
<p>Overhead Contact System (OCS) installation delay due to low productivity</p> <p>Note: The project OCS work was on hold from March 10, 2022, to March 28, 2022 during the safety stand down.</p>	<ul style="list-style-type: none"> • Additional BBII OCS crew training for regulation and variance in the OCS design / installation due to re-design & accommodations to resolve foundation Differing Site Conditions (DSC) issues – Done. • Hiring additional BBII OCS staff members to prevent schedule slippage and help in future installation planning – Done. • Hold OCS construction scheduling recovery workshop for remaining OCS installation and testing – Done. • Increase OCS crews and OCS wiring equipment to increase productivity - Done
<p>Timely completion of Segment 2 Signal/2SC cutover</p>	<ul style="list-style-type: none"> • 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, including weekend bus bridge. • Advance notification to the public on train schedule service changes for weekend shutdown. • Last major cutover is planned for December 5, 2022 through December 19, 2022.
<p>Funding of \$410 million program gap</p>	<ul style="list-style-type: none"> • 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.
<p>Lack of field railway worker in charge (RWIC) for increased work crews</p>	<ul style="list-style-type: none"> • Design-builder brought in more watchmen for off-track work. • TASI to expedite RWIC hiring and training. • Explore third party field resource procurement path. • Assess operational impact for expanding work limits with track and time.

2.0 SAFETY

There were two reportable injuries in October (1 back and 1 foot injury). The Reportable Injury Rate (RIR) for 2022 through October is 2.79. Overall, since the project’s inception, the RIR is at 1.86.

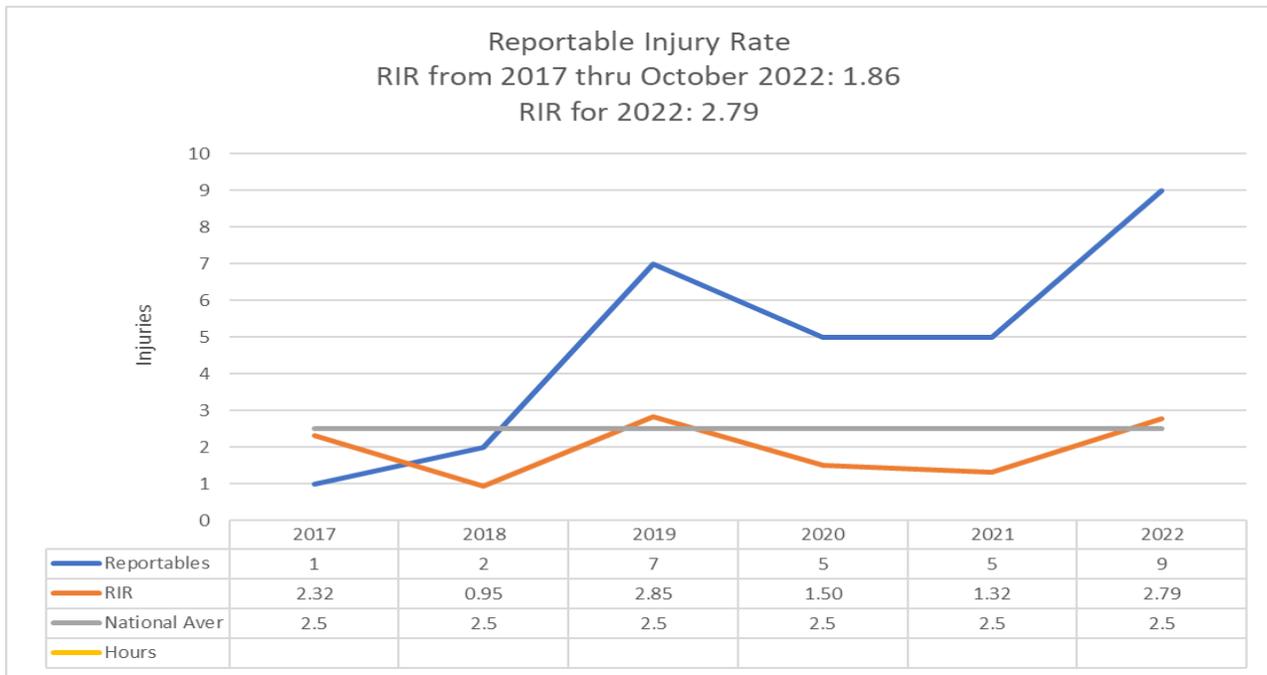


Figure 2-1. Project Reportable Injury Rate (RIR) by Year

Completed Work

Safety staff continues to coordinate with contractors to identify opportunities to improve safety performance. Organizational-wide safety briefings are being performed to ensure staff understand the application of post incident mitigation measures including rules and procedural changes designed to enhance safety. Project Safety continues to reinforce jobsite safety practices throughout the Caltrain alignment, investigate incidents, and identify mitigation measures to prevent re-occurrences. Safety project coordination meetings continue to be conducted monthly to promote a clear understanding of project safety requirements. In addition, Caltrain Safety has initiated weekly calls with the lead safety staff from Caltrain, PCEP, BBII, and TASI to discuss safety performance and ongoing initiatives.

Upcoming Work

The Fire/Life Safety Committee continues to work with the San Jose and Santa Clara Fire Departments on Emergency Preparedness in preparation for the energization of Segment 4. The safety team has updated the OCS and EMU emergency responder safety familiarization presentations to include voiceover features for use by the Fire Departments. The presentation will also be shared with other emergency responder jurisdictions through the project Fire/Life Safety Committee. A full-scale emergency exercise that will include an electrification incident response component is scheduled for November 20, 2022. Segment 3 Fire Department safety awareness training has been scheduled for Sunnyvale (1/4, 1/5, and 1/6/2023) and Mountain View (1/30, 2/1, and 2/3/2023) Fire Departments. Additional training is currently being

coordinated with other Segment 3 Fire Departments.

OCS safety awareness training has been provided to 243 Fire Department trainers, third party contractors, and tenant railroad personnel with additional classes to be scheduled as needed. PCEP will continue to train key management personnel and provide training material for use in training their respective personnel.

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3.0 IMS PROGRAM SCHEDULE

3.1 Introduction

The Integrated Master Schedule (IMS) Program Summary Schedule depicted in **Figure 3-1** shows the schedule status of the major PCEP projects. The forecasted dates for this program schedule were based on the source documents to the IMS as of November 1, 2022. The Revenue Service Date (RSD) and Full Funding Grant Agreement (FFGA) Revenue Completion Date (RCD) remains September 26, 2024, and December 31, 2024 respectively.

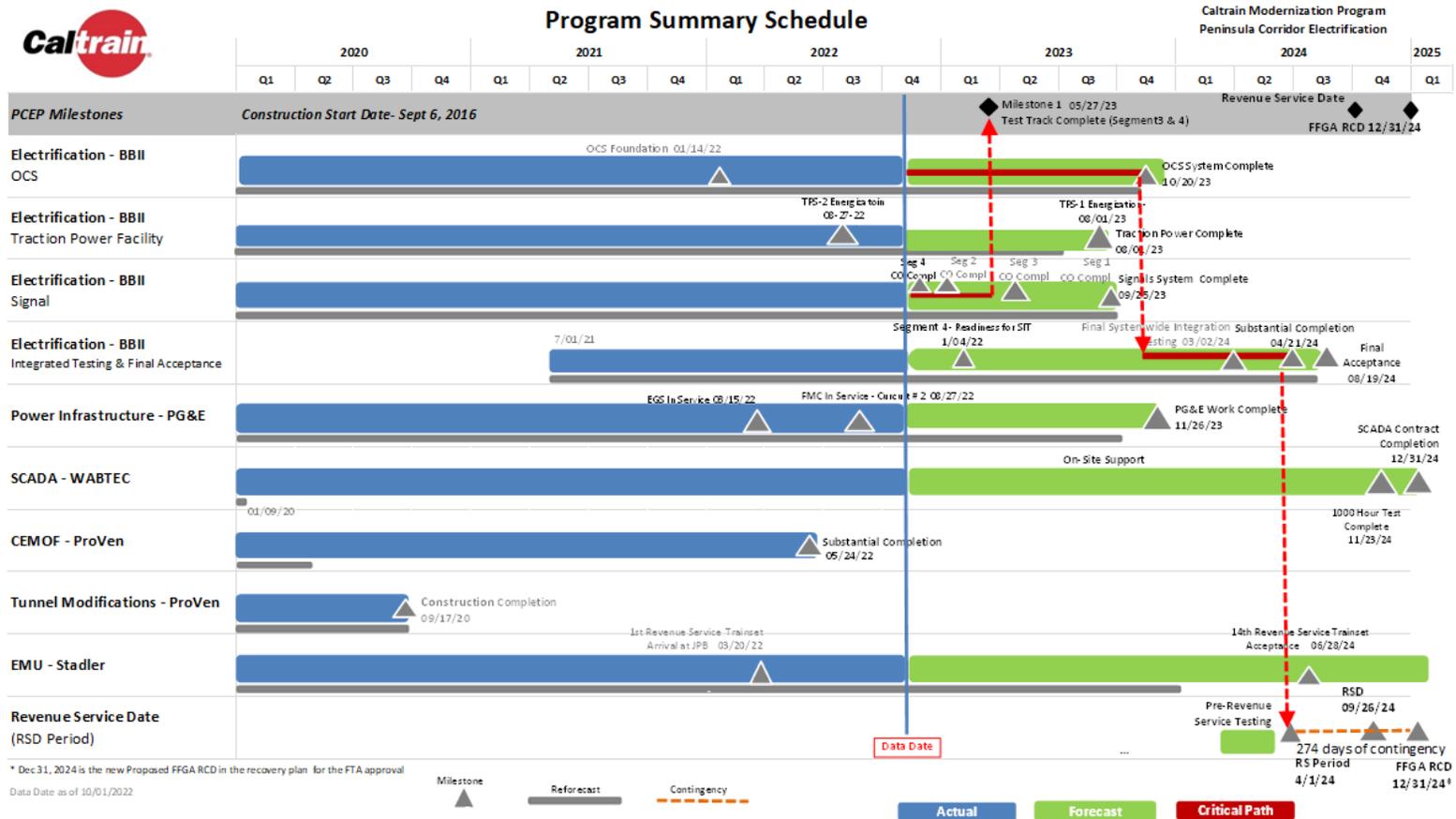


Figure 3-1. Master Program Summary Schedule

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3.2 Critical Path Analysis

The critical path this month is now shown to go through the Signal Design, OCS Construction, Signal Installation, Communications Installation, and Testing and Commissioning. The project criticality has slipped from -16 days in September 2022 to -20 days this month in October.

The current near critical path is the Wayside Power Construction followed by Testing and Commissioning. The near critical path is within 7 days of the critical path.

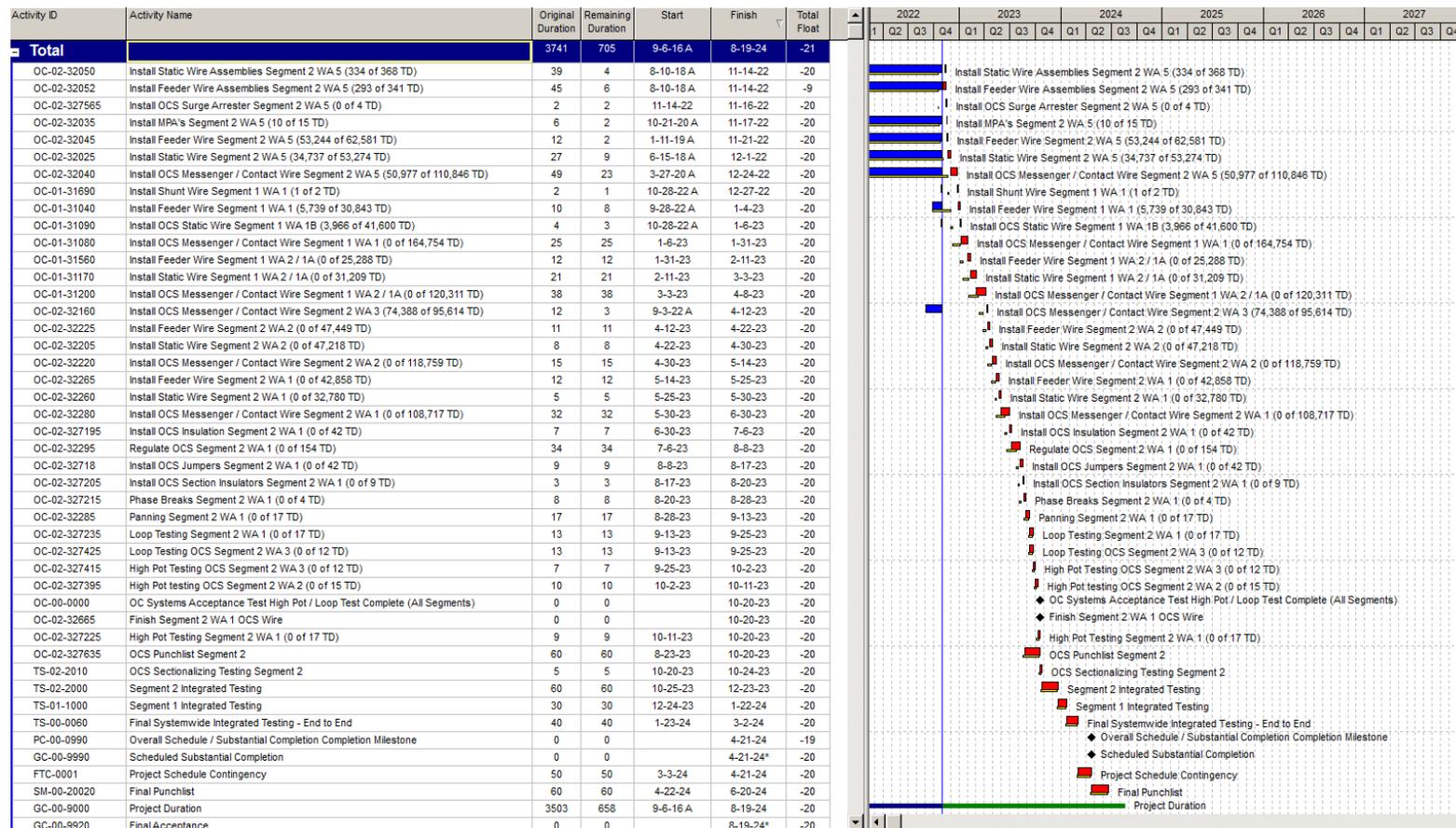


Figure 3-2. Critical Path Schedule

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3.3 Schedule Contract Milestone Analysis

Milestone 1, redefined to include Segment 3 and 4 for more trainset testing mileage, is scheduled by May 2023. The current forecast date for full alignment Substantial Completion is now April 21, 2024 with Final Acceptance now forecasted for August 19, 2024.

Contractor	Milestones	Reforecast (June 2022) Dates	Current (October 2022) Forecast	Milestone Finish Date Variance	Remarks
BBII	Segment 4 Completion	15-Nov-22	04-Jan-23	-50	Delayed by grounding and bonding delays and delays to Segment 4 integrated testing
BBII	Completion of Milestone 1 (Segments 3 and 4)	30-Apr-23	27-May-23	-27	Delayed by Seg 2 Phase 1 signal cutover installation delays which, in turn, delayed installation of Segment 3 signal cutovers
BBII	Traction Power Substation #1 Energization	03-Jun-23	01-Aug-23	-59	Delayed by replacement of the batteries and revisions of the enclosure at TPSS-1 to meet PG&E requirements
BBII	Signal Cutovers and Systems Completion	16-Sep-23	25-Sep-23	-9	Delayed by Seg 2 Phase 1 signal cutover installation delays which, in turn, delayed installation of Seg 3 and 1 signal cutovers
BBII	OCS Construction Completion	25-Sep-23	20-Oct-23	-25	Delayed by installation delays of OCS beams, poles and static & feeder wiring in Segment 2
Stadler	14th Trainset Final Acceptance	04-Jan-24	28-Jun-24	-176	Stadler is experiencing track access availability, workforce availability and material issues with their Suppliers.
BBII	System Integration Testing Start (Segment 4)	05-Oct-22	24-Nov-22	-50	Delayed by energization delay of Overhead Contact System (OCS)
BBII	System Integration Testing Completion	07-Feb-24	02-Mar-24	-24	Delayed by installation of Overhead Contact System (OCS) in Segments 2 and 1.
BBII	Substantial Completion	01-Apr-24	21-Apr-24	-20	Delayed by Integrated Testing
BBII	Scheduled Final Acceptance	30-Jul-24	19-Aug-24	-20	Delayed by Final Completion and Final Acceptance Testing
JPB	Revenue Service Date (RSD)	26-Sep-24	26-Sep-24	0	
JPB	FFGA Revenue Completion Date (RCD)	31-Dec-24	31-Dec-24	0	

Note: The Stadler variance is measured from February 2022 Rebaseline Schedule.

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4.0 COST AND BUDGET

4.1 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 4-1 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 October 31, 2022.

4.2 Program Budget and Cost

Table 4-1. Budget Summary by Project

Description of Work	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	\$7,718,498	\$1,418,145,700	\$330,993,738	\$1,749,139,438	\$0
EMU	\$693,551,258	\$13,963,536	\$498,292,960	\$195,258,299	\$693,551,258	\$0
PCEP TOTAL	\$2,442,690,697	\$21,682,034	\$1,916,438,660	\$526,252,037	\$2,442,690,697	\$0

¹ Column A "Current Budget" includes re-baseline and 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 4-2 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 4-2. Budget Summary by Major Elements

Description of Work	Re-Baseline Budget	Current Budget	Cost This Month	Cost To Date	Estimate To Complete	Estimate At Completion
Electrification	\$1,097,149,881	\$1,097,149,881	\$3,982,761	\$834,755,412	\$262,278,469	\$1,097,033,881
EMU Procurement	\$556,072,601	\$556,204,966	\$12,986,483	\$414,698,351	\$141,506,615	\$556,204,966
Minor Construction Contracts (Tunnel, CEMOF, SCADA, Non-BBI OCS)	\$67,055,072	\$68,091,194	\$0	\$64,453,991	\$3,637,203	\$68,091,194
Real Estate Acquisition & Support	\$34,914,177	\$34,914,177	\$15,737	\$23,895,686	\$11,018,492	\$34,914,177
PG&E, Utilities	\$132,088,995	\$132,088,995	\$753,213	\$201,069,233	-\$68,980,238	\$132,088,995
Management Oversight & Support	\$312,699,697	\$312,899,697	\$2,735,495	\$252,050,715	\$62,948,981	\$314,999,697
TASI Support	\$114,488,767	\$114,488,767	\$1,190,404	\$87,070,805	\$27,417,962	\$114,488,767
Finance Charges	\$9,898,638	\$9,898,638	\$68,248	\$9,182,809	\$715,829	\$9,898,638
Insurance	\$6,581,851	\$6,581,851	\$0	\$4,897,449	\$1,684,402	\$6,581,851
Other Required Projects & Services	\$9,084,176	\$9,084,176	\$3,622	\$3,052,385	\$6,031,791	\$9,084,176
Environmental Mitigation	\$14,438,866	\$14,438,866	\$15,130	\$1,242,229	\$13,196,637	\$14,438,866
Caltrain Capital Overhead (ICAP)	\$48,217,887	\$48,217,887	(\$69,058)	\$20,069,594	\$28,148,293	\$48,217,887
Contingency	\$40,000,089	\$38,631,602	\$0	\$0	\$36,647,602	\$36,647,602
Total	\$2,442,690,697	\$2,442,890,697	\$21,682,034	\$1,916,438,660	\$526,252,037	\$2,442,690,697

4.3 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 4-3 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 (27 Risk IDs listed below in Table 4-3) that are above \$250,000 require Change Management Board (CMB) approval.

Table 4-3. Shared Risk Pool Status as of October 2022

Risk ID	Risk Description	Risk Amount	Current Month	Executed to Date	Remaining Balance
1	Permanent Power Availability	\$268,572	\$0	\$160,916	\$107,656
2	Different Site Condition for OCS Foundation	\$3,500,000	(\$36,535)	\$986,104	\$2,513,896
3	Different Site Condition for Duct bank	\$2,800,000	\$27,009	\$125,666	\$2,674,334
4	Condition of existing Fiber backbone infrastructure	\$3,150,000	\$0	\$132,561	\$3,017,439
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	\$29,125	\$509,447
8	EMI Nonconformance by EMU Vendor	\$750,000	(\$144,500)	\$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	\$0	\$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	\$159,342	\$2,007,340
19	Track access delay for BBII Construction	\$1,800,000	\$0	\$14,605	\$1,785,395
20	Additional light Maintenance and Protection Needs	\$280,000	\$144,500	\$144,500	\$135,500
21	Crossing Protection	\$220,000	\$0	\$102,334	\$117,666
22	Power facilities	\$500,000	\$0	\$0	\$500,000
23	NCR's	\$0	\$0	\$0	\$0
24	Potholing	\$1,700,000	\$36,535	\$107,547	\$1,592,453
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	\$900,000	\$11,100,000
NA	Unidentified	\$54,179	\$0	\$0	\$54,179
	BBII Risk Pool Total	\$50,000,000	\$27,009	\$2,891,624	\$47,108,376

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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 unknown costs. Table 4-4 provides a detailed status of approved transfers from contingency due to executed Contract Change Orders and approved Budget Transfers.

Table 4-4. Program Contingency Drawdown Balance

Change Order	Description	Current Budget Contingency	EAC Contingency
Project Contingency		Previously Reported Balance	\$38,831,602
BT-027D	Legal Support FY23 – PG&E Counsel	(\$200,000)	
BT-029D	GFI Electrification Engineering FY23-24 Additional Staff		\$2,100,000
PROJECT CONTINGENCY REMAINING BALANCE		\$38,631,602	\$36,647,602

Note: EAC Contingency reflects forecast contingency.

4.4 Electrification Design Builder Contract Incentives

The Global Settlement with BBII also includes incentives based on Milestone completions and remaining contract incentives. Table 4-6 provides a status of Design-Build Contractor incentives Budgeted, Awarded, and remaining Balance.

Table 4-5. 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

4.5 Program Cash Flow and Funding

The remaining program expenditures are cash flowed in Figure 4-1 to illustrate by July 2023 additional funding will be needed to complete the program.

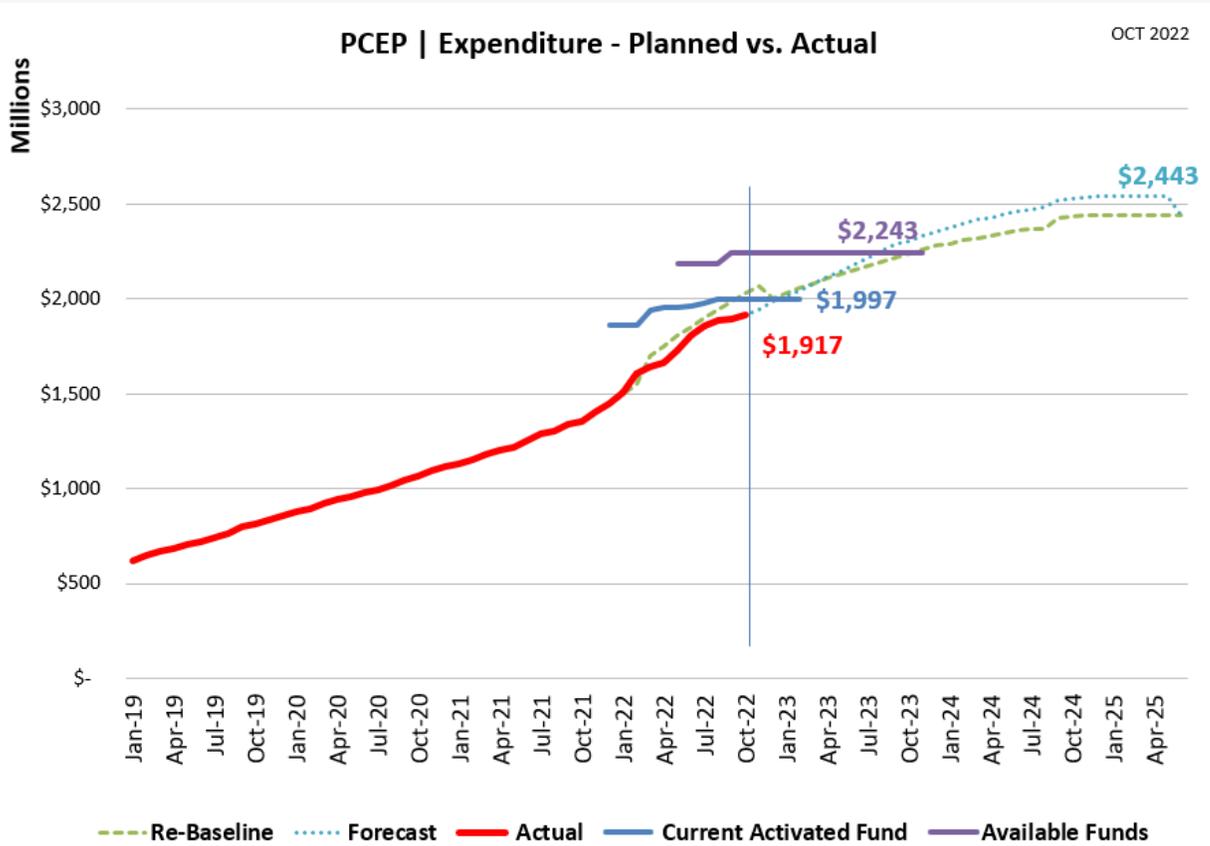


Figure 4.1 Expenditure – Funding Cash Flow

4.6 Issues

Table 4-6. Cost and Funding Issues Identified, and Actions Taken for October 2022

Issues	Actions
Additional funding setup for \$410M Funding Gap.	<ul style="list-style-type: none"> 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.

5.0 CHANGE MANAGEMENT

5.1 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.

5.2 Change Orders/Shared Risk Pool

5.2.1 Executed Shared Risk

The following Shared Risk items were executed in October 2022:

- DSC Concrete at MP13.2 (Combination of IRLs 013, 014, 023, 152, 153, 168, 169, 175, and 176) was executed for \$27,009 on October 19, 2022.

5.2.2 Approved Change Orders

- None.

5.2.3 Upcoming Change Orders/Shared Risk Items

- Sixteen (16) shared risk items, totaling \$972,482 are being routed for management approval signatures.
- EMU Change Order of \$110,367 for additional special tools to provide for Y Connector Boxes at CEMOF.

5.3 Issues

Table 5-1. Change Management Issues Identified and Actions Taken for October 2022

Issues	Actions
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.	<ul style="list-style-type: none"> • Define EMU testing and burn in work schedule. • BBII provides isolation and protection once Segment 4 is powered up. • BBII will provide maintenance lite during EMU testing and burn in. • Prepare Request for Proposal for OCS/TPS Maintenance Service for public procurement. • Develop evaluation criteria for Maintenance Service proposals. • Recommend for award and obtain JPB board approval.
Increase security service to prevent on-going theft problem.	<ul style="list-style-type: none"> • Working with design build contractor to identify ROW security surveillance needs and work out commercial arrangement for shared cost.