



Caltrain Modernization Program Peninsula Corridor Electrification Project (PCEP)



Executive Monthly Progress Report

December 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 performing a schedule reforecast effort and 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 December 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 December 2022, a total of \$3.20M has been drawn down from the Shared Risk Pool of \$50 million. In December 2022, \$0.10M was drawn from the Shared Risk Pool.
- As of December 2022, a total of \$3.47M has been drawn from the project contingency of \$40 million. In December 2022, there was no draw from project contingency.
- As of December 2022, no new awards have been made from the Project incentive pool of \$18.5 million.
- As of December 2022, no incentive was issued from the milestone incentive pool of \$15 million.

1.3 Program Progress and Schedule

As of December 31, 2022, the overall project completion is 79.39%. The current program schedule is projecting a PCEP substantial completion date of April 2024 and Revenue Service by September 2024. Staff has finalized a 2023 path to completion and service impact plan that will include system integration testing, signal cutovers, and proactive OCS construction productivity mitigations for the remaining PCEP work. The first weekend closure will commence on February 11, 2023 from Millbrae to San Francisco 4th and King.

1.4 Change Management Board (CMB)

In December 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 December 2022:

- Successfully completed the cutover for Segment 2 at Menlo Park, Redwood City, and Palo Alto from December 5 - December 19, 2022. Completed cutover lessons learned after completion of the cutover.
- FTA and Caltrain program quarterly status review was held on December 5, 2022.
- Caltrain has received \$43 million in federal funding as part of the omnibus spending bill signed by President Biden in December 2022.
- Continued implementing energized rail isolation and protection procedure.
- Performed Emergency Preparedness Plan (EPREP) rehearsal and finalized new timetables.
- Continued development of OCS/TPS maintenance RFP.
- Continued 25kV in-depth OCS awareness training for all TASI staff and tenant railroad trainers prior to full Segment 4 energization.
- Continued to work with PG&E on the interconnect construction cost reimbursement timeline.
- Performed holiday homeless encampment operations with Transit PD and SamTrans security.
- Completed 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.
- Key positions for PCEP delivery have been filled.
- Performed regression tests for previous 2SC cutover location application logic update.
- Continued providing PCEP progress updates to funding partners, leadership, elected officials, citizens, and business community. The funding task force is completing TIRCP grant application for formal submission.
- Continued Rail Activation effort on path to energization for Segment 4 and CEMOF.
- Finalized RWIC needs for the remaining field work for 2022 among BBII, Rail Operations and TASI.
- Finalized 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. Assessed impact to customers and Rail Operations.
- Project special task force and Caltrain steering committee commenced for rail service planning, bus bridge, customer service and communications with the board members to support PCEP path to completion.
- Finalized Program Management Plan (PMP) and Quality Management Plan (QMP).
- Continued to address TPS 2 findings and complete documentation required to perform short circuit retest.

1.6 Upcoming work

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

- Complete 25kV in-depth OCS awareness training for all TASI staff and tenant railroad trainers prior to full Segment 4 energization by mid-January 2023.

- Complete project schedule reforecast that reflects the path to completion and weekend area closures for the remaining PCEP work.
- Continue operations planning, ambassador and rail service planning effort for weekend area closures for Segment 1 and 2 OCS construction, and complete bus bridge service single source RFP.
- Perform readiness reviews for weekend bus bridges for OCS construction starting in February 2023.
- Continue to coordinate with PG&E on TPS2 short circuit testing, low voltage power drop applications, and distribution line de-energization work.
- Continue to hold executive and project team partnering sessions in January 2023.
- Perform train operator EMU refresher training and commence EMU maintenance training.
- Energize drill track to enable EMU re-commissioning and PTC testing.
- Continue pursuing federal and local grants to close the remaining funding gap of \$367 million.
- Hold Monthly CMB meeting for program status and change order approval.
- Commence Segment 3 Menlo Park cutover planning.
- Complete Segment 4 mainline live runs and full energization.
- Complete negotiation on Railroad isolation and protection change order.

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

1.7 Critical Items

As of December 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 – Completed. • Hiring additional BBII OCS staff members to prevent schedule slippage and help in future installation planning – Completed. • Hold OCS construction scheduling recovery workshop for remaining OCS installation and testing – Completed. • Increase OCS crews and OCS wiring equipment to increase productivity – Completed. • More track access including weekend area closures for remaining Segments 1 and 2 OCS construction and testing.
<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.

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Critical Issues	Actions
	<ul style="list-style-type: none"> • Last major cutover for Segment 2 is planned for December 5, 2022 through December 19, 2022 – Completed.
Funding of \$410 million program gap	<ul style="list-style-type: none"> • Special task force was in place to identify federal and state grant opportunities to pursue – Completed. • Targeted advocacy is ongoing. • Prepared earmarks grant scope and application. • Submitted Transit and Intercity Rail Capital Program (TIRCP) grant application. • Caltrain has received \$43 million in federal funding as part of the omnibus spending bill signed by President Biden in December 2022. • Amended and reduced our grant request for TIRCP funding under the Existing Projects application process from \$410 million to \$367 million.
Lack of field railway worker in charge (RWIC) for increased work crews	<ul style="list-style-type: none"> • Design-builder brought in more watchmen for off-track work. • TASI to expedite RWIC hiring and training – Completed. • Assess operational impact for expanding work limits with track and time – Completed.

2.0 SAFETY

There were no reportable injuries in December. The Reportable Injury Rate (RIR) for the entire year (2022) is 2.82 (down from 3.08 last month). Overall, since the project’s inception, the RIR is at 1.91, which is down from last month’s 1.95.

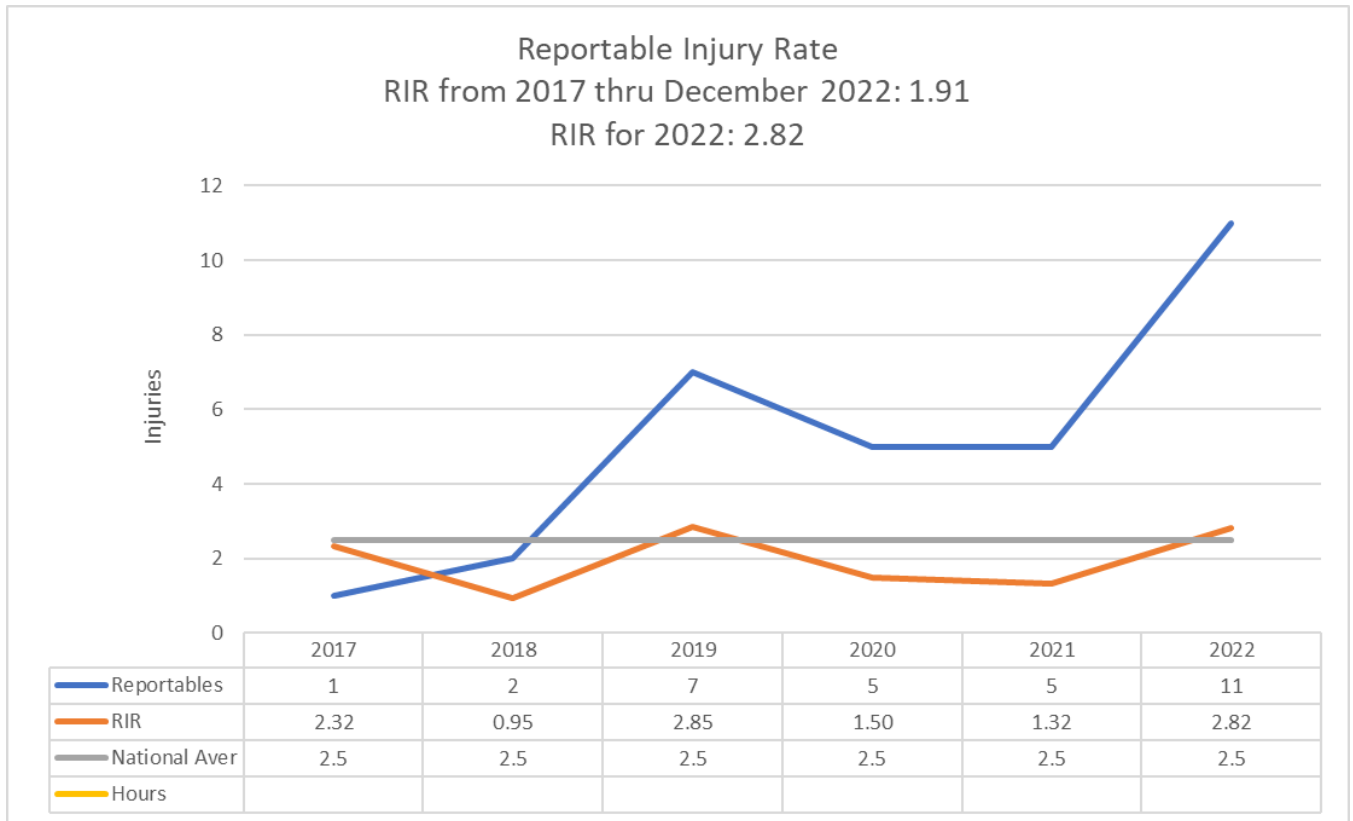


Figure 2-1. Project Reportable Injury Rate (RIR) by Year

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 continues 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 emergency responders along the Caltrain corridor on emergency preparedness in advance of energization. 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. Segment 3 Fire Department safety awareness training has been scheduled in the first quarter of 2023 for Sunnyvale, Mountain View, and Palo Alto Fire Departments. Additional training is currently being coordinated with other Fire Departments.

OCS safety awareness training continues to be provided and made available for 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 January 1, 2023. The Revenue Service Date (RSD) and Full Funding Grant Agreement (FFGA) Revenue Completion Date (RCD) remains September 26, 2024, and December 31, 2024 respectively.

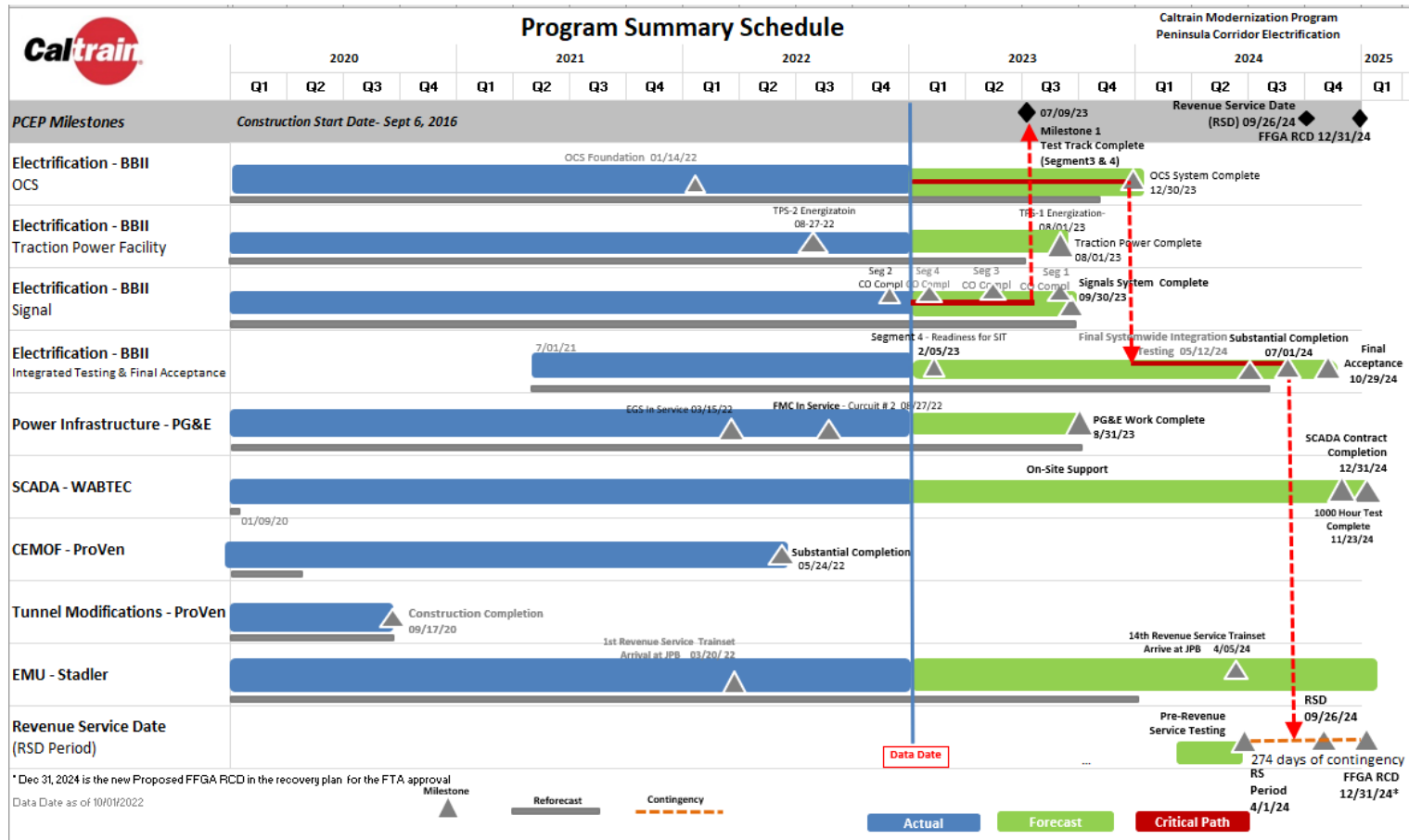


Figure 3-1. Master Program Summary Schedule

3.3 Schedule Contract Milestone Analysis

Milestone 1, redefined to include Segment 3 and 4 for more electrified mileage, is scheduled by July 2023. The current forecast date for full alignment Substantial Completion is April 22, 2024 with Scheduled Final Acceptance forecasted for August 20, 2024.

Project is currently performing schedule reforecast effort with data date of January 1, 2023 to reflect Path to Completion weekend area shutdown approach. The Contract Milestone Analysis table will be updated once schedule reforecast effort is completed in February 2023.

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4.0 COST AND BUDGET

4.1 Introduction

This section presents an update on 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 December 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	\$23,327,321	\$1,465,924,376	\$283,215,062	\$1,749,139,438	\$0
EMU	\$693,551,258	\$430,862	\$499,392,562	\$194,158,697	\$693,551,258	\$0
PCEP TOTAL	\$2,442,690,697	\$23,758,183	\$1,965,316,938	\$477,373,758	\$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	\$17,461,139	\$871,811,548	\$225,222,333	\$1,097,033,881
EMU Procurement	\$556,072,601	\$556,204,966	\$0	\$414,698,351	\$141,506,615	\$556,204,966
Minor Construction Contracts (Tunnel, CEMOF, SCADA, Non-BBI OCS)	\$67,055,072	\$68,091,194	\$7,996	\$64,602,778	\$3,488,416	\$68,091,194
Real Estate Acquisition & Support	\$34,914,177	\$34,914,177	\$71,416	\$23,980,488	\$10,933,689	\$34,914,177
PG&E, Utilities	\$132,088,995	\$132,088,995	\$521,186	\$202,044,621	-\$69,955,626	\$132,088,995
Management Oversight & Support	\$312,699,697	\$315,007,767	\$2,786,148	\$257,522,069	\$57,485,698	\$315,007,767
TASI Support	\$114,488,767	\$114,488,767	\$2,091,448	\$90,614,275	\$23,874,492	\$114,488,767
Finance Charges	\$9,898,638	\$9,898,638	\$59,348	\$9,304,280	\$594,358	\$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	\$102,452	\$3,174,578	\$5,909,598	\$9,084,176
Environmental Mitigation	\$14,438,866	\$14,438,866	\$0	\$1,242,229	\$13,196,637	\$14,438,866
Caltrain Capital Overhead (ICAP)	\$48,217,887	\$48,217,887	\$657,051	\$21,424,272	\$26,793,616	\$48,217,887
Contingency	\$40,000,089	\$36,523,532	\$0	\$0	\$36,639,532	\$36,639,532
Total	\$2,442,690,697	\$2,442,690,697	\$23,758,183	\$1,965,316,938	\$477,373,758	\$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 December 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	\$0	\$986,104	\$2,513,896
3	Different Site Condition for Duct bank	\$2,800,000	\$39,730	\$165,396	\$2,634,604
4	Condition of existing Fiber backbone infrastructure	\$3,150,000	\$0	\$232,814	\$2,917,186
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	\$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	\$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	\$13,140	\$13,140	\$136,860
18	Impact from Caltrain other capital or third-party projects	\$2,166,683	\$11,150	\$170,492	\$1,996,191
19	Track access delay for BBII Construction	\$1,800,000	\$0	\$128,986	\$1,671,015
20	Additional light Maintenance and Protection Needs	\$280,000	\$0	\$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	\$0	\$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	\$32,312	\$932,312	\$11,067,688
NA	Unidentified	\$54,179	\$0	\$0	\$54,179
	BBII Risk Pool Total	\$50,000,000	\$96,332	\$3,202,589	\$46,797,411

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	\$36,523,532	\$36,639,532
	<i>No changes for the month</i>		
	PROJECT CONTINGENCY REMAINING BALANCE	\$36,523,532	\$36,639,532

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.

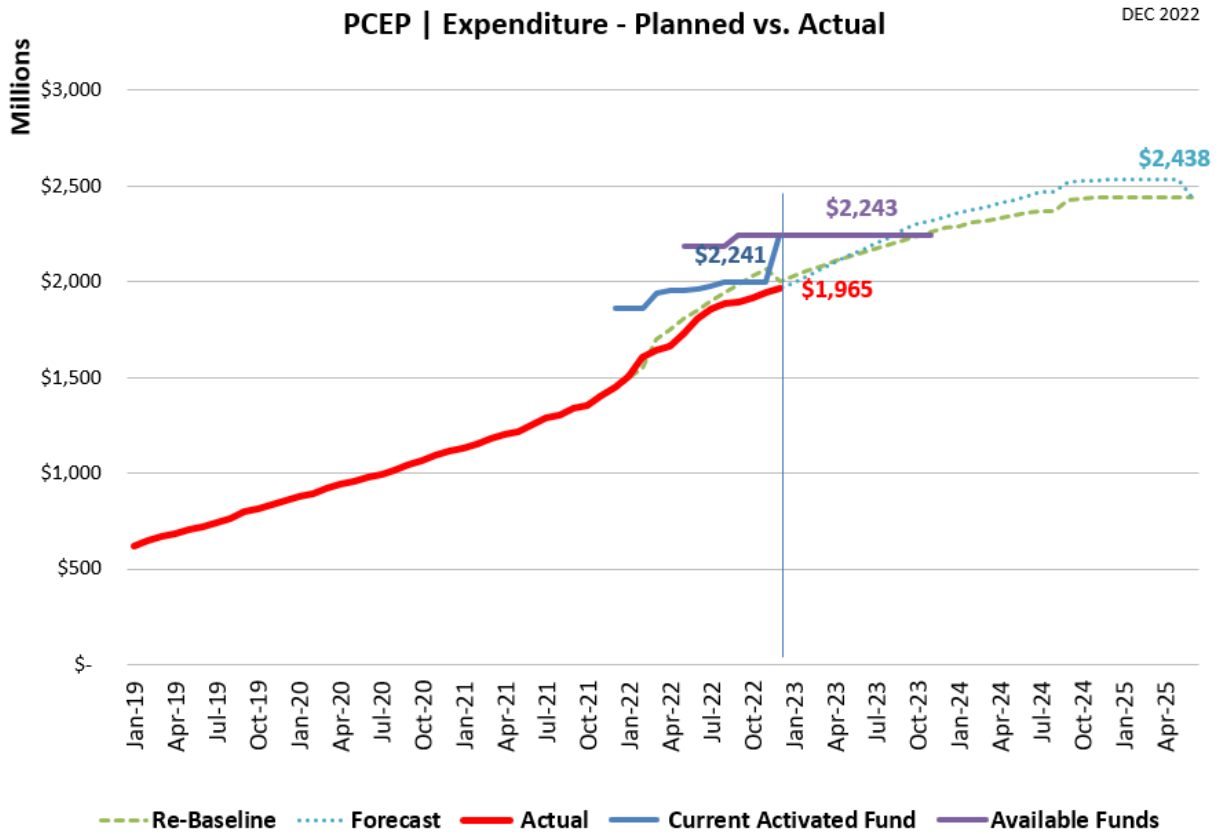


Figure 4.1 Expenditure – Funding Cash Flow

4.6 Issues

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

- ADA Ramp installed over 9.1-02A was executed on December 16, 2022 for \$11,150.
- Combination of DSC's IRL's 183, 184, 193, 194, 195, 198, 201, 222, 223, 224, 227, 229, 230, 231 were executed on December 16, 2022 for \$39,730.
- Signal House at MP 40.01 – Removal of AC Unit to clear ROW was executed on December 15, 2022 for \$13,140.
- 25kV Safety Awareness Training and Secondary In-Depth Training were executed on December 16, 2022 for \$35,312.

5.2.2 Approved Change Orders

- No Change Orders for the month of December 2022.

5.2.3 Upcoming Change Orders/Shared Risk Items

- Fifteen (15) shared risk items, totaling \$859,946 are being routed for management approval signatures.
- Electrification Change Order for Guadalupe Bridge OCS Removal and Replacement for \$1,298,842.
- Potential Change to add manual phase breaks for EMU, totaling \$43,520.

5.3 Issues

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