

Caltrain Electrification Project Update

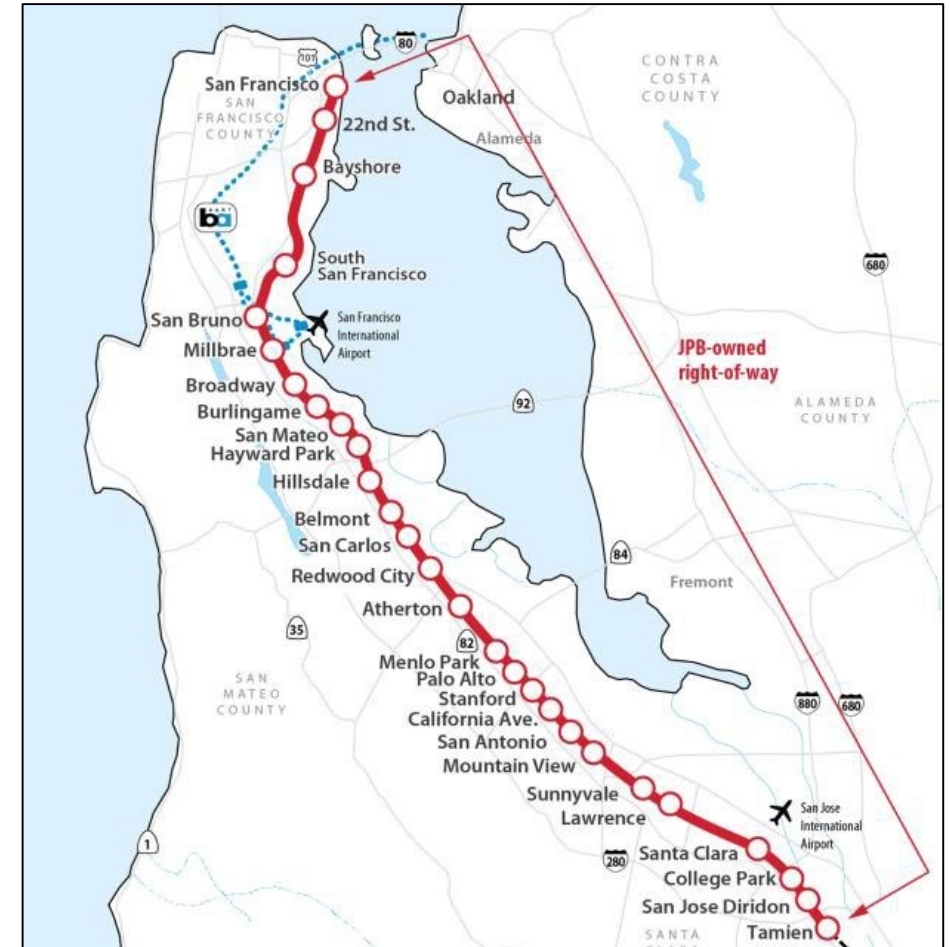
Peninsula Corridor Joint Powers Board
September 1, 2022
Agenda Item #13



Project Overview

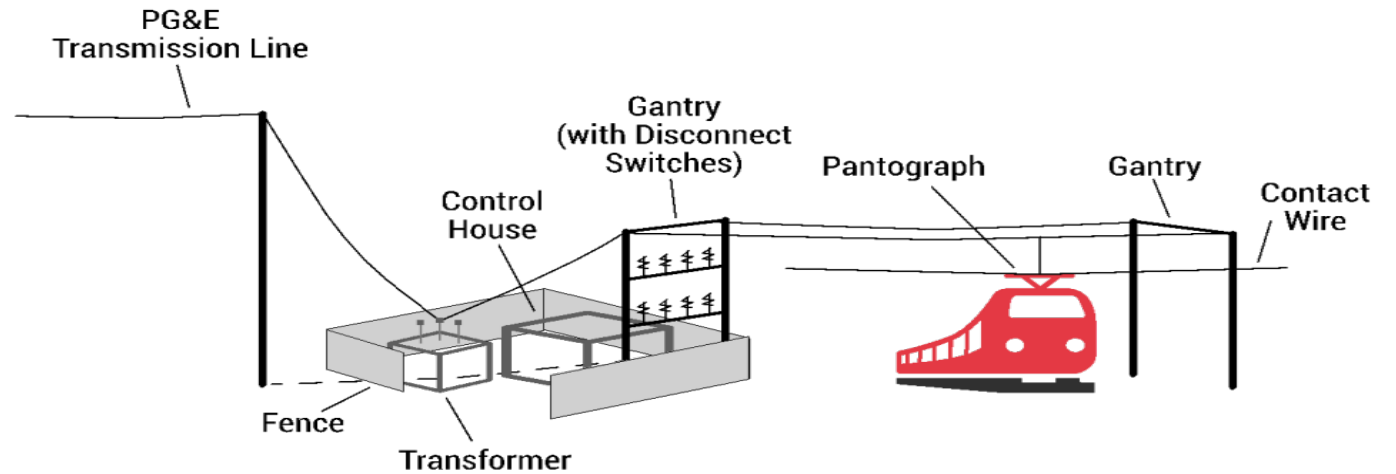
Project Overview

- San Francisco to San Jose (Tamien Station)
- 51 miles
- Project Cost: \$2.44B
- Revenue Service: fall 2024



Project Elements

- Electrification
 - Overhead Contact System (OCS)
 - Traction Power Facilities
 - Signal System
- Electric Trains
 - 19 7-car train sets (133 cars)
 - 75% replacement diesel fleet



(Note: 96 cars funded by project; 37 cars funded by State TIRCP)

Project Benefits



Improved Train Performance,
Increased Service and Greater Capacity

Improved Regional Air Quality and
Reduced Greenhouse Gas Emissions



Job Creation Locally and
Across the Country



Reduced Engine Noise
Emanating from Trains



Project Highlights

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- Schedule: No change to revenue service date - fall 2024
- Budget: No change to project budget - \$2.44B
 - \$1.04M drawn from \$40M project contingency in most recent month (July 2022)
 - \$1.77M drawn from \$50M shared risk pool in most recent month (July 2022)
 - ICAP reevaluation / CHSRA review continuing
- Construction
 - Energization of Traction Power Facility in San Jose
 - Completion of Overhead Contact System Construction in Segment 3
 - Single Phase Study for TPS-2 approved by PG&E and Silicon Valley Power
 - PG&E Transmission Load Operating Agreement executed by PG&E and JPB; filed with CPUC
- Electric Trains
 - Two additional trainsets arrived in August; four trainsets on property
 - Electric train clearance test successfully completed

Safety and Security

Time Period	Reportable Injury Rate
January 1 to July 31, 2022	2.08
Since Project Start (2017)	1.74

Note: National Average Reportable Injury Rate is 2.50.

- Zero reportable injuries for July 2022
- Safety Team coordinating with Operations and Electric Trains team to develop emergency responder safety presentation to be shared with local first responders through Project Fire/Life Safety Committee
- **Project Safety Awareness Trainings have been scheduled for September 2022 and January 2023 (Segment 3 jurisdictions)**

Construction Update

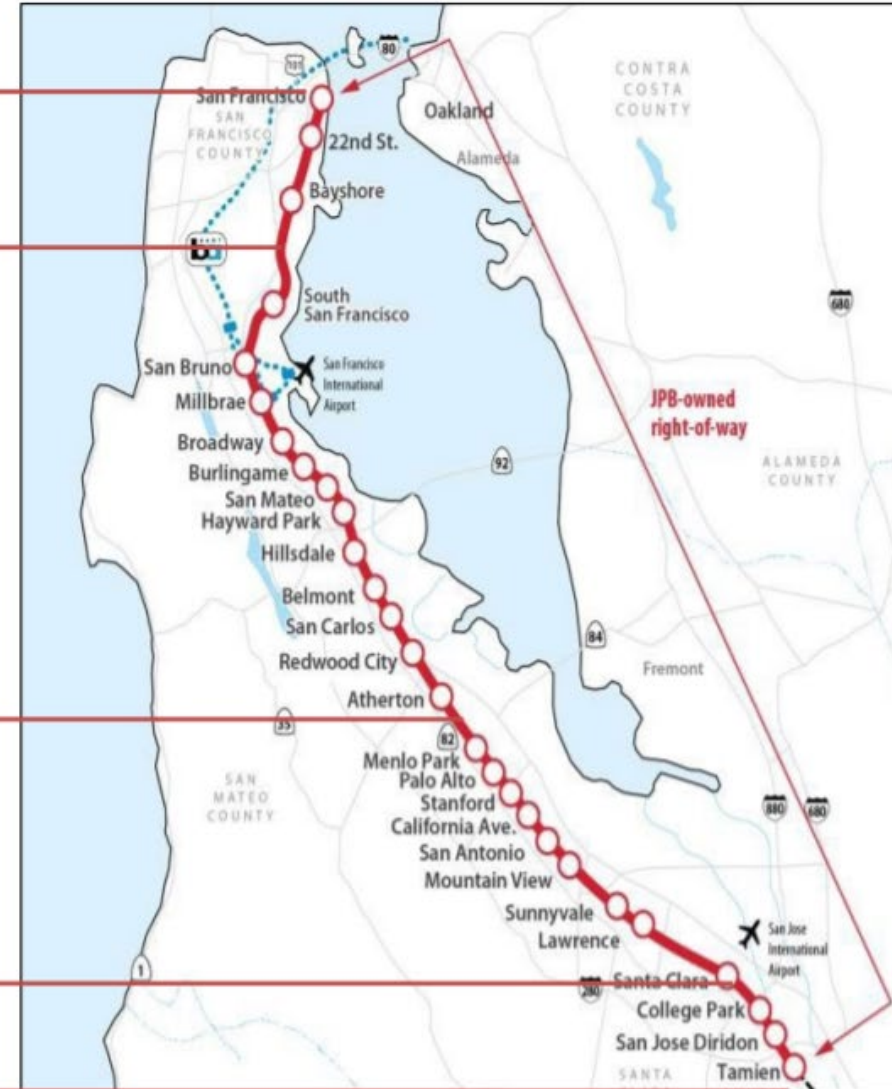
Construction Segments

Segment 1
San Francisco to Brisbane

Segment 2
South San Francisco to Atherton

Segment 3
Menlo Park to Santa Clara

Segment 4
Santa Clara to Tamien



Construction Update

Construction currently on schedule and on budget.

Overhead Contact System			
Component	Segment	Installed in July	Remaining
Foundations (3,092 total)	Segments 4, 3, 2, 1	Complete	0
Poles (2,587 total)	Segments 4 / 3	Complete	0
	Segments 2 / 1	135	213
Wire (1.5M linear feet total)	Segments 4 / 3	Complete	0
	Segments 2 / 1	0	826K Linear Feet

Traction Power Facilities		
Component	Percentage Completed in July	Total Percent Complete
Traction Power Facilities (10 total)	1%	93%



Electric Trains

- Two additional trainsets arrived in August; four trainsets on site
- Carshells for 18th trainset in production
- Successful electric train corridor clearance test
- PTC brake testing completed in Pueblo, CO
- Trainsets arrive to Caltrain every 2-3 months
- 14th trainset anticipated arrival fall 2023
- 19th trainset anticipated arrival fall 2024



Trainset Arrival in August

Signal System and Communication

2 Speed Check (2SC)

- Segment 4
 - Communications Testing of fire alarms at traction power facilities
- Segment 2
 - Installation of signal facilities, duct bank and cable in preparation for Segment 2 cutovers
 - Final pretesting of Phase 1 cutover between South San Francisco and San Bruno in preparation for upcoming cutover, now planned for weekend of October 15, 2022
- Segments 1 and 3
 - Installation of signal cases and kits

Crossing Optimization Project

(outside of PCEP scope)

- Deployment of following first six pilot locations in May 2022:
 - San Jose: Auzerais Avenue and Virginia Street
 - Millbrae: Center Street and Santa Paula Pedestrian Crossing
 - San Francisco: Mission Bay Drive and 16th Street
- Temporarily deactivated six pilot wireless crossings due to on-board software error
- Wabtec plans to release updated software for testing/deployment in November 2022
- Affected crossings will utilize wayside system until updated software is deployed
- Wabtec developing schedule recovery and mitigation plan

Signal Work Schedule

City	Number of Crossings	2 Speed Check Installation	Crossing Optimization (Wireless) Installation (outside PCEP scope)
San Jose	2	January 2021	May 2022
Millbrae	1	December 2021	May 2022
Burlingame	6	May 2022	Winter 2022/2023
San Mateo	9	May 2022	Winter 2022/2023
South San Francisco	1	Fall 2022	Winter 2022/2023
San Bruno	1	Fall 2022	Winter 2022/2023
Redwood City	6	Fall 2022	Spring/Summer 2023
Atherton	2	Fall 2022	Spring 2023
Menlo Park	4	Fall 2022	Summer 2023
Palo Alto (Alma and Churchill)	2	Fall 2022	Summer 2023
Palo Alto (Charleston and East Meadow)	2	Spring 2023	Summer 2023
Mountain View	2	Spring 2023	Spring 2023
Sunnyvale	2	Spring 2023	Fall 2023
San Francisco	2	Fall 2023	Spring 2024

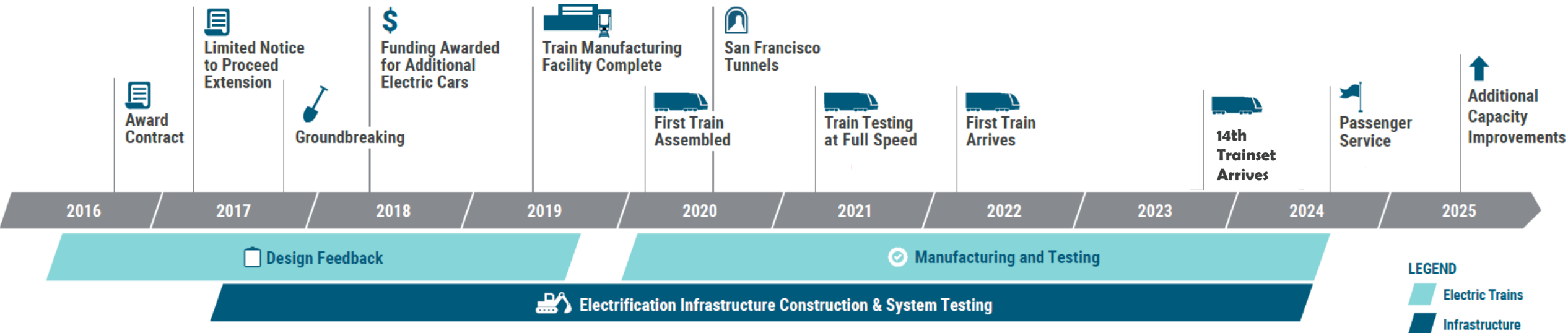
Notes: Dates subject to change; signal work at UPRR owned crossing in Santa Clara to be determined



Program Management

Program Master Schedule

Revenue Service Fall 2024



Key Milestones

No delay to critical path compared to the December 2021 project re-baseline schedule.

Item	Rebaseline Date	Forecasted Date
Completion of Signal System Cutovers in Segment 2	November 2022	November 2022
Completion of Segment 4 Integrated Testing with EMU	May 2022	November 2022
Completion of OCS Construction Work (Critical Path)	September 2023	September 2023
Completion of Signal System Work (Near Critical Path)	September 2023	September 2023
Acceptance of 14 th Trainset	January 2024	February 2024
BBII Electrification Substantial Completion	April 2024	April 2024
Revenue Service Date	September 2024	September 2024

Note: Integrated testing with EMU slippage due to late power availability, integrated testing occurs after segment 4 TPS 2/OCS is energized.



Critical Path Milestones

No delay to the critical path compared to the December 2021 project re-baseline schedule.

Item	Rebaseline Date	Forecasted Date
Overhead Contact System Construction (Critical Path)		
Completion of OCS Construction in Segment 3	July 2022	Completed July 2022
Completion of OCS Construction in Segment 2	June 2023	June 2023
Completion of OCS Construction in Segment 2	September 2023	September 2023
Rail Signal and Communications (Near Critical Path)		
Completion of Signal System Cutovers in Segment 2	November 2022	November 2022
Completion of Signal System Cutovers in Segment 3	April 2023	April 2023
Completion of Signal System Cutovers in Segment 1	September 2023	September 2023
Pre-Revenue Service Testing	April 2024	April 2024
Revenue Service Date	September 2024	September 2024



Top Risks

	Risk	Mitigation	Critical Date
	OCS installation delay due to low productivity	<ul style="list-style-type: none"> Additional BBII OCS crew training for regulation and variance in the OCS design/installation due to redesign and accommodations to resolve foundation Differing Site Conditions (DSC) issues. Hiring additional BBII OCS staff members to prevent schedule slippage and help in future installation planning. Held OCS construction scheduling recovery workshop for remaining OCS installation and testing. Additional resources expected in September 	September 2022
	Funding of \$410 million program gap	<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. 	April 2023
	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. Explore third party field resource procurement path. Assess operational impact for expanding work limits with track and time. 	Ongoing

Green = Mitigations/actions identified and no impact to budget/schedule

Yellow = Mitigations/actions identified and potential impact to budget/schedule

Red = Impact to budget/schedule

Top Risks, cont'd

	Risk	Mitigation	Critical Date
	The contractor may not complete signal and communication design, installation, testing, and cutover for the Two-speed Check (2SC) modifications on time.	<ul style="list-style-type: none"> Streamline design reviews Initiate construction prior to IFC Consolidate locations for cutover, where possible Add an additional cutover team through Balfour/MRS Reduce service and three-week single track during cutover period to maximize access and cutover work windows 	September 2023
	Change of vehicle sub-suppliers could result in additional first article inspections at cost to JPB (i.e., COVID, bankruptcy).	<ul style="list-style-type: none"> Discourage substitutions: key suppliers require PCEP approval, require additional design reviews, inspections and documentation. Seek reimbursement from Contractor for PCEP additional expenses Conduct inspections post arrival in USA Utilize on-site inspector for FAIs to minimize costs No additional substitutions noted by Stadler. Others possible during multi-year manufacturing phase 	December 2022

Green = Mitigations/actions identified and no impact to budget/schedule

Yellow = Mitigations/actions identified and potential impact to budget/schedule

Red = Impact to budget/schedule

Program Budget

Description of Work	Re-Baseline Budget	Cost This Month	Cost To Date	Estimate To Complete	Estimate At Completion
Electrification	\$1,097,149,881	\$18,659,855	\$817,433,692	\$279,716,189	\$1,097,149,881
EMU Procurement	\$556,072,601	\$20,143,649	\$385,417,362	\$170,787,605	\$556,204,966
Minor Construction Contracts (SSF, 25th Grade, Tunnel, CEMOF, SCADA, Non-BBI OCS)	\$67,055,072	\$0	\$64,431,604	\$3,659,590	\$68,091,194
Real Estate Acquisition & Support	\$34,914,177	\$25,476	\$23,780,944	\$11,133,233	\$34,914,177
PG&E, Utilities	\$132,088,995	\$498,383	\$199,320,311	-\$67,231,316	\$132,088,995
Management Oversight & Support	\$312,699,697	\$2,408,169	\$244,096,387	\$68,603,310	\$312,699,697
TASI Support	\$114,488,767	\$2,774,097	\$82,808,797	\$31,679,970	\$114,488,767
Finance Charges	\$9,898,638	\$86,027	\$8,861,754	\$1,036,884	\$9,898,638
Insurance	\$6,581,851	\$0	\$4,581,851	\$2,000,000	\$6,581,851
Other Required Projects & Services	\$9,084,176	\$68,899	\$2,848,680	\$6,235,496	\$9,084,176
Environmental Mitigation	\$14,438,866	\$0	\$1,205,404	\$13,233,462	\$14,438,866
Caltrain Capital Overhead (ICAP)	\$48,217,887	\$3,078,564	\$21,557,025	\$26,660,863	\$48,217,887
Contingency	\$40,000,089	\$0	\$0	\$38,831,602	\$38,831,602
Total	\$2,442,690,697	\$47,743,120	\$1,856,343,809	\$586,346,888	\$2,442,690,697

Notes: "Re-Baseline Budget" includes executed change orders and awarded contracts;

"Cost This Month" represents cost of work performed July 2022;

"Cost To Date" includes actuals (amount paid) and accruals (amount of work performed) as of July 2022.

"Contingency" budget is drawn down and transferred to other elements after CMB approvals as reflected in the Estimate at Completion.

As of July 31, 2022



Program Budget

(Management Oversight and Support)

- PCEP Management Oversight and Support Service approved budget \$312.7 million
- Projected remaining costs to completion (August 2022 – December 2024) \$68.6 million

Vendor	Current Contract Authority	Additional Contract Authority Dates	Additional Contract Authority
JACOBS	\$35,500,000	Approved December 2021	Increased by \$18,500,000
AECOM	\$36,361,332	Approved in August 2022	Increased by \$11,943,960
B&G	\$5,060,000	Approved in August 2022	Increased by \$4,432,182
Gannett Fleming	\$67,743,400	Anticipated in December 2022	\$8.3M (Estimated)
LTK	\$36,845,000	Anticipated in October 2023	\$0.8M (Estimated)
Totals	\$181,509,732		\$43,976,142

Note: Above amounts identified in budget scrub conducted in December 2021 and included in the \$2.44 program budget.



Major Contract Progress

Contract	Contract Value	Cost Incurred to Date	Contract Percent Complete	Weighted Percent	Total Percent of Project Complete
Balfour Beatty Infrastructure	\$1,097,149,881	\$817,433,692	75%	59.69%	44.47%
Stadler EMU Procurement	\$555,841,582	\$385,417,362	69%	30.24%	20.97%
ARINC SCADA	\$4,456,418	\$3,670,802	82%	0.24%	0.20%
PG&E	\$124,106,400	\$111,406,407	90%	6.75%	6.06%
ProVen Tunnels	\$47,033,089	\$47,033,089	100%	2.56%	2.56%
ProVen CEMOF	\$9,476,816	\$9,443,616	100%	0.52%	0.51%
Total	\$1,838,064,186	\$1,374,404,967		100.00%	74.77%

Notes: Includes only major direct contracts; does not include Management Oversight, TASI, Finance Charges, Insurance, ICAP, Contingency



\$40 Million Program Contingency

- **Allocated Contingency** includes potential costs (contractors or owners) identified as risks with scope and amount uncertainty
 - TP SCADA Contract Time Extension
 - COVID relief claims
 - Additional Grounding and Bonding
 - Utilities Cost for Permanent power for testing
 - Additional Training and Testing Support
- **Unallocated Contingency** is available for future potential costs that have not yet been identified

\$40 Million Program Contingency

Status	Amount
Program Contingency	\$40.0M
Amount Drawn	(\$1.17M)
Remaining	\$38.83M
CMB August 2022 Approved	(\$0.00M)
Forecasted Remaining Contingency	\$38.83M

Note: 'Change Management Board Approved' includes approved changes not yet drawn from contingency.

\$50 Million Shared Risk Contingency

Status	Amounts
BBII Shared Risk Contingency	\$50.00M
Amount Drawn	(\$2.55M)
Remaining	\$47.45M
CMB August 2022 Approved	(\$0.00M)
Forecasted Remaining Shared Risk Contingency	\$47.45M

Note: 'Change Management Board Approved' includes approved changes not yet drawn from contingency.

Funding Update (Federal)

- Supplemental FTA Capital Investment Grants Full Funding Grant Agreement (FFGA) funding
 - House THUD Appropriations Bill (estimate \$51M could go towards project)
- FRA Federal State Partnership for Intercity Rail grant program (partnership with HSR)
 - Advocating for beneficial NOFO criteria; Applications likely October 2022
 - Coordination with MTC, Diridon, Downtown Extension, HSR stakeholders
- “Community Project” funding
 - \$10M included Senate Appropriations Bill by Senator Feinstein and Padilla

Funding Update (State)

- FY 23 State Budget signed into law
 - \$10.9B transportation package over 4 years
 - \$900M - \$1.5B available in N. California for projects that meet certain criteria - Caltrain Electrification eligible

Upcoming Board Actions

- Contract Authority for Consultant Services
 - Hatch LTK
 - Gannett Fleming

FOR MORE INFORMATION

WWW.CALTRAIN.COM

