

Caltrain Electrification Project Update

Peninsula Corridor Joint Powers Board
November 3, 2022
Agenda Item #12



Project Overview

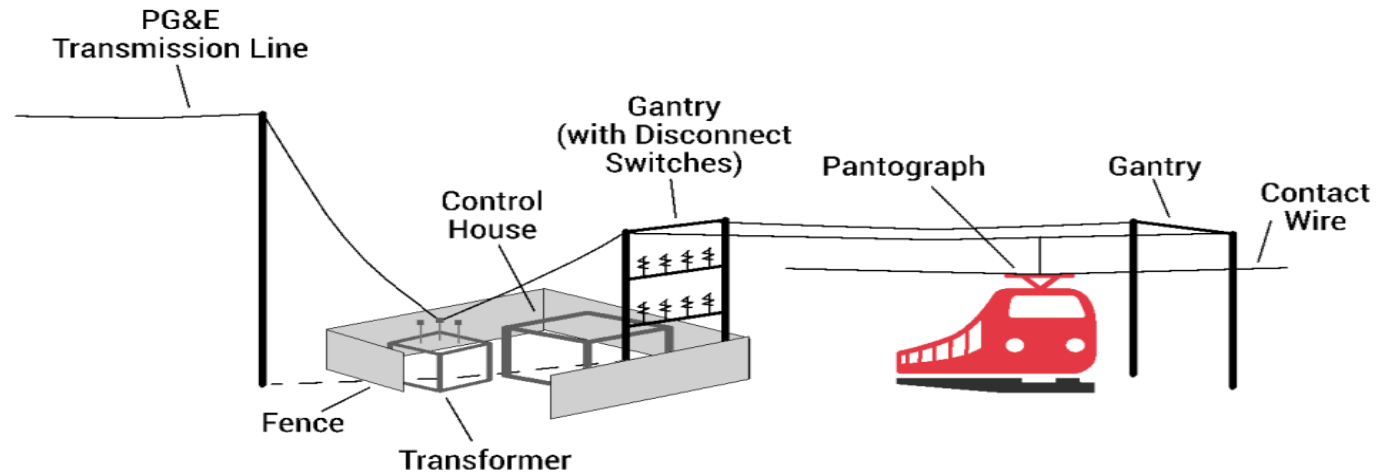
Project Overview

- 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
 - No draw executed from \$40M project contingency in most recent month (September 2022)
 - **\$57K draw executed from \$50M shared risk pool in most recent month (September 2022)**
 - ICAP reevaluation / CHSRA review continuing
- Construction
 - **Energization testing in Santa Clara and San Jose**
 - **Completion of signal software installation and testing in South San Francisco and San Bruno**
 - **Preparation for major signal software installation and testing in December**
- Electric Trains
 - **Static testing continues on property**
 - **Dynamic testing anticipated late 2022**

Safety and Security

Time Period	Reportable Injury Rate
January 1 to September 30, 2022	2.41
Since Project Start (2017)	1.77

Note: National Average Reportable Injury Rate is 2.50.

- One reportable injury for September 2022
- Project Safety Awareness trainings ongoing for Local Fire and Police Departments
- Full-scale emergency exercise scheduled for November 6, 2022
- Development of emergency responder safety presentation for local first responders

Construction Update

Construction Segments

Segment 1
San Francisco to Brisbane

Segment 2
South San Francisco to Atherton

Segment 3
Menlo Park to Santa Clara

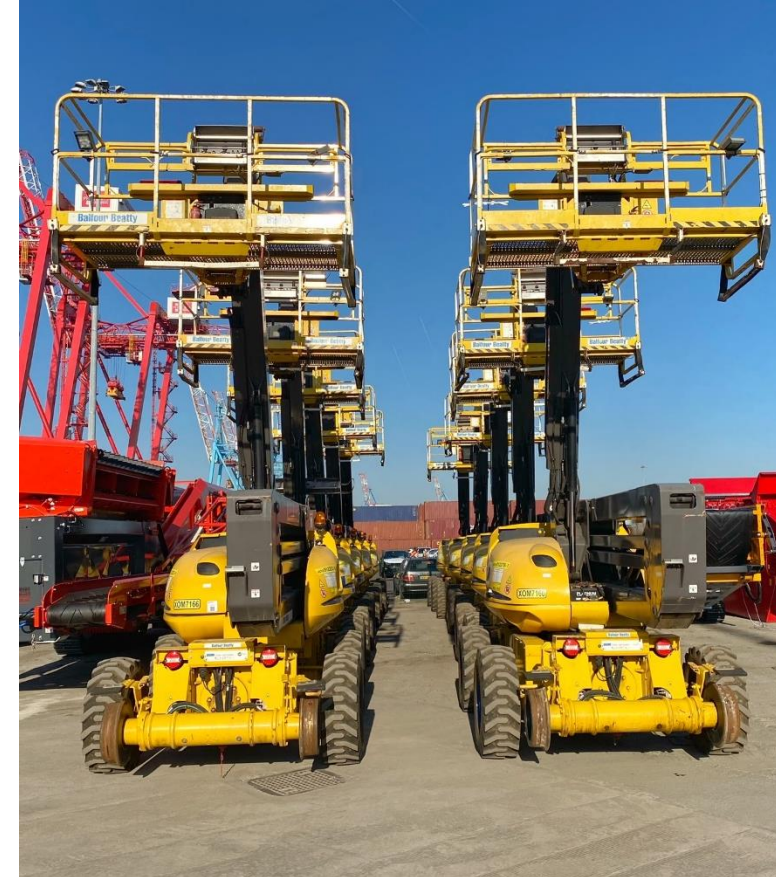
Segment 4
Santa Clara to Tamien



Construction Update

Overhead Contact System			
Component	Segment	Installed in September	Remaining
Foundations (3,092 total)	Segments 4, 3, 2, 1	Complete	0
Poles (2,587 total)	Segments 4 / 3	Complete	0
	Segments 2 / 1	17	144
Wire (1.5M linear feet total)	Segments 4 / 3	Complete	0
	Segments 2 / 1	105K Linear Feet	657K Linear Feet

Traction Power Facilities		
Component	Percentage Completed in September	Total Percent Complete
Traction Power Facilities (10 total)	0%	93%



Energization Testing – Segment 4

Weekend of November 5-6

Energization and testing of Overhead Contact System in Santa Clara and San Jose

- Successful testing on weekends of October 22-23 & 29-30
- Additional testing weekend of November 5-6
 - First northbound train will start at Lawrence Station
 - First northbound train will not serve Tamien, Diridon and Santa Clara stations (approx. 30 riders/day)
 - Riders who use these stops can instead take free VTA bus service to Lawrence Station, where they can board the train.
- Planned Outreach
 - Station Signage
 - Mailers
 - Email blasts
 - Take Ones
 - Social Media
 - Visual Messaging Sign
 - Coordination with Cities & VTA
 - Conductor Announcements

Electric Trains

- **Dynamic testing anticipated late 2022**
- Carshells for Trains 17-19 in production
- Trains 6-10 in production at Salt Lake City
- Four trainsets on property
- 14th trainset anticipated arrival early 2024
- 19th trainset anticipated arrival fall 2024



Electric Train Celebration Event

Signal System and Communication

2 Speed Check (2SC)

- Segment 2
 - Installation of signal facilities, duct bank and cable for major signal installation and testing in December
 - Completion of signal installation and testing between South San Francisco and San Bruno
- Segments 1 and 3
 - Installation of signal cases and kits

Signal System and Communication

(2 Speed Check) – Major Signal Work in December

- Installation of 2 Speed Check hardware and software at 16 grade crossings in Redwood City, Atherton, Menlo Park and Palo Alto
- Weekdays: December 5th – 9th & December 12th – 16th
 - Reduced schedule on weekdays
 - Peak service reduced to 2 trains each hour per direction (down from 4)
 - Baby Bullet service suspended
 - Last four trains of evening suspended
- Weekends: Dec. 10th-11th & 17th-18th
 - No Caltrain service between Belmont and Mountain View stations
 - SamTrans bus bridge to replace service during two weekend
 - Evening service ends early

Customer Outreach

- Landing page
- Organic social
(Twitter, FB, IG, Nextdoor, Tiktok)
- Paid digital and print ads
- Station ambassadors
- Email blasts
- Mobile app alerts
- Visual messaging signage at stations
- Onboard and station announcements
- Press release
- Amplify message via elected officials, cities, counties
- Updates to key stakeholders, business groups
- Outreach to event venues

Crossing Optimization Project

(outside of PCEP scope)

- **Wabtec released engineering build software, testing/deployment in November 2022**
- 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
- Affected crossings will utilize 2 Speed Check system until updated software is deployed
- Wabtec submitted revised project schedule 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	March 2023
San Mateo	9	May 2022	Spring 2023
South San Francisco	1	October 2022	Summer 2023
San Bruno	1	October 2022	Summer 2023
Redwood City	6	December 2022	Fall 2023
Atherton	2	December 2022	Fall 2023
Menlo Park	4	December 2022	Fall 2023
Palo Alto (Alma and Churchill)	2	December 2022	Winter 2023/2024
Palo Alto (Charleston and East Meadow)	2	Spring 2023	Winter 2023/2024
Mountain View	2	Spring 2023	Winter 2023/2024
Sunnyvale	2	Spring 2023	Winter 2023/2024
San Francisco	2	Fall 2023	Spring 2024

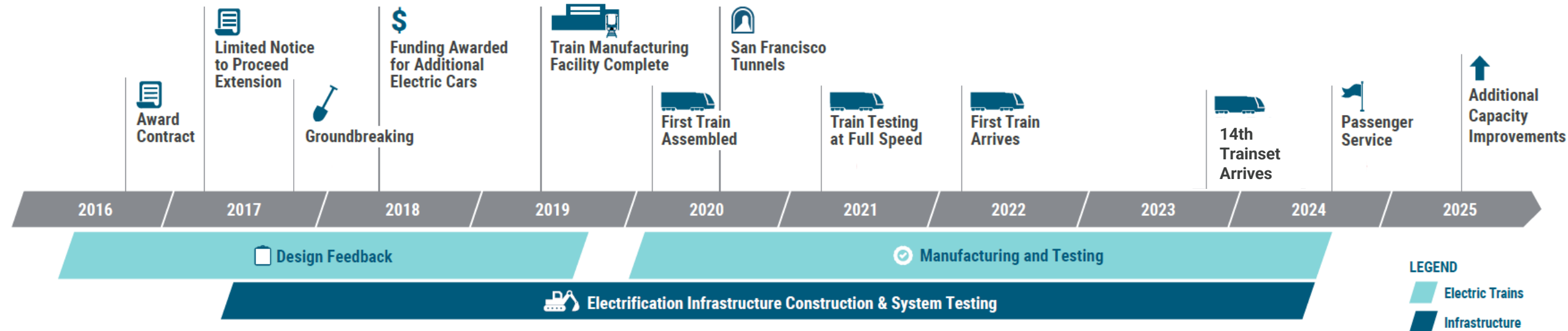
Notes: Dates subject to change; signal work at UPRR owned crossing in Santa Clara to be determined



Program Management

Program Master Schedule

Revenue Service Fall 2024



Key Milestones

No delay to Revenue Service Date of September 2024.

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

- Completion of Segment 4 Integrated Testing delayed due to grounding and bonding issues
- Acceptance of 14th trainset delayed due to Stadler resource availability and supplier issues



Critical Path Milestones

No delay to Revenue Service Date of September 2024.

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 1	June 2023	August 2023
Completion of OCS Construction in Segment 2	September 2023	October 2023
Rail Signal and Communications (Near Critical Path)		
Completion of Signal System Cutovers in Segment 2	November 2022	December 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	May 2024
Revenue Service Date	September 2024	September 2024

- OCS Construction in Segment 1 delayed due to low productivity

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. Increase OCS crews and OCS wiring equipment to increase productivity. 	Ongoing
	Sufficient 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
	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

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
	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.	June 2023

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	-\$3,291,783	\$830,772,651	\$266,261,230	\$1,097,033,881
EMU Procurement	\$556,072,601	\$6,720,000	\$401,711,868	\$154,493,098	\$556,204,966
Minor Construction Contracts (SSF, 25th Grade, Tunnel, CEMOF, SCADA, Non-BBI OCS)	\$67,055,072	\$43,299	\$64,453,991	\$3,637,203	\$68,091,194
Real Estate Acquisition & Support	\$34,914,177	\$85,760	\$23,879,948	\$11,034,229	\$34,914,177
PG&E, Utilities	\$132,088,995	-\$251	\$200,316,020	-\$68,227,026	\$132,088,995
Management Oversight & Support	\$312,699,697	\$2,940,320	\$249,315,220	\$63,584,476	\$312,899,697
TASI Support	\$114,488,767	\$1,602,929	\$85,880,401	\$28,608,366	\$114,488,767
Finance Charges	\$9,898,638	\$139,426	\$9,114,561	\$784,077	\$9,898,638
Insurance	\$6,581,851	\$0	\$4,897,449	\$1,684,402	\$6,581,851
Other Required Projects & Services	\$9,084,176	\$149,535	\$3,048,763	\$6,035,413	\$9,084,176
Environmental Mitigation	\$14,438,866	\$20,000	\$1,227,099	\$13,211,767	\$14,438,866
Caltrain Capital Overhead (ICAP)	\$48,217,887	-\$578,245	\$19,303,147	\$28,914,740	\$48,217,887
Contingency	\$40,000,089	\$0	\$0	\$38,747,602	\$38,747,602
Total	\$2,442,690,697	\$7,830,990	\$1,893,921,120	\$548,769,577	\$2,442,690,697

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

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

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

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

As of September 30, 2022



Program Budget

(Management Oversight and Support)

- PCEP Management Oversight and Support Service approved budget \$312.7 million
- Projected remaining costs to completion (October 2022 – December 2024) \$63.6 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	\$830,772,651	75.7%	59.69%	45.2%
Stadler EMU Procurement	\$555,841,582	\$401,711,868	72.3%	30.24%	21.9%
ARINC* SCADA	\$4,400,346	\$3,659,133	83.2%	0.24%	0.2%
PG&E**	\$124,106,400	\$111,887,188	90.2%	6.75%	6.1%
ProVen Tunnels	\$47,059,353	\$47,059,353	100.0%	2.56%	2.6%
ProVen CEMOF	\$9,476,816	\$9,474,676	100.0%	0.52%	0.5%
Total	\$1,838,034,378	\$1,404,564,869		100.00%	76.42%

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

*Does not include T&M portion of CCO-005

**Represents the PCEP portion with cost sharing allocation of PCEP 40% / PG&E 60%



\$40 Million Program Contingency

Status	Amount
Program Contingency	\$40.0M
Amount Drawn	(\$1.17M)
Remaining	\$38.83M
CMB October 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	(\$2.86M)
Remaining	\$47.14M
CMB October 2022 Approved	(\$0.00M)
Forecasted Remaining Shared Risk Contingency	\$47.14M

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)
- “Community Project” funding
 - \$10M included Senate Appropriations Bill by Senator Feinstein and Senator Padilla
- FRA Federal State Partnership for Intercity Rail grant program
 - Advocating for beneficial NOFO criteria; Applications likely late October 2022
 - Coordination with MTC, Diridon, Downtown Extension, HSR stakeholders

Funding Update (State)

- FY 23 State Budget signed into law
 - \$10.9B transportation package over 4 years
 - \$900 - \$1.2B available for existing projects outside of Southern California that meet certain criteria - Caltrain Electrification eligible – Announcement of awards expected January 2023

Upcoming Board Actions

- Increase Contract Authority Within Existing Budget for Consultant Services
 - Gannett Fleming (December 2022)
 - Hatch LTK (October 2023)

FOR MORE INFORMATION

WWW.CALTRAIN.COM

