



Advanced Signal System Update (CBOSS PTC)

LPMG Meeting
June 25, 2015

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[CBOSS PTC Video](#)

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Context

Caltrain Modernization Program

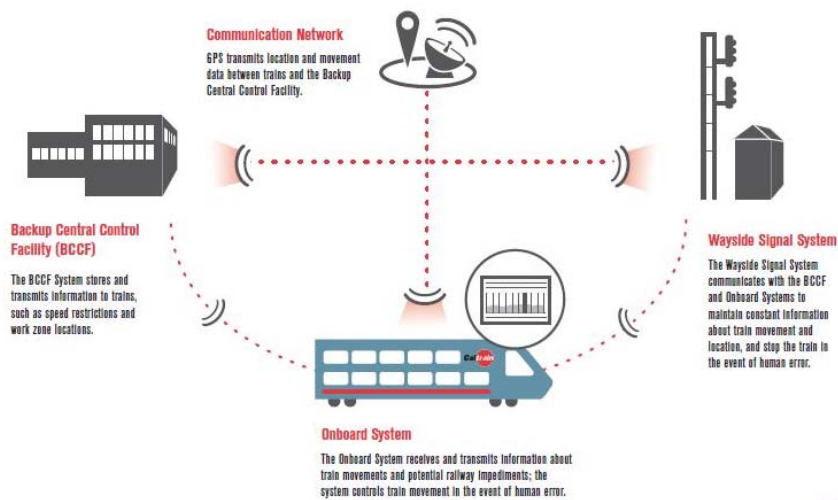
- Projects
 - ➔ Advanced Signal System (2015)
 - Peninsula Corridor Electrification Project (2020)



Project Description

- Communications Based Overlay Signal System (CBOSS) Positive Train Control (PTC)
- Fiber Optic Network
- Project Requirements
 - Includes federal mandate (PTC)
 - Improves Caltrain performance
- Project Partners
 - FRA, UP, CHSRA, JPB
- Needed for Blended System

How the Project Works



CBOSS PTC Requirements

- PTC
 - Prevent train to train collisions
 - Prevent over speed derailments
 - Prevent incursions into established work zones
 - Prevent movement through a misaligned switch
 - Interoperability
- CBOSS
 - Enhanced crossing safety / performance
 - Improved headways and operational flexibility
 - Enforcement of scheduled station stops
 - Schedule management
 - Employee In Charge

Project Benefits



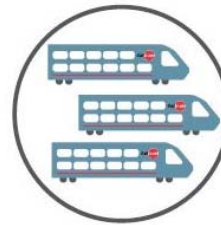
Improved Safety

- Eliminate risk of train-to-train collisions
- Reduce risk of over speed derailments
- Provide additional safety for railroad workers



Increased Reliability & Operating Performance

- Provide better schedule management
- Enforce scheduled station stops
- Improve grade crossing performance from reduced gate downtime



Capacity Benefits

- Minimize spacing between trains
- Start and stop more quickly
- Provide faster and/or more frequent service

Project Total Cost and Milestones

Description	Cost (in millions)	Milestones
Project Planning and Procurement	\$5	2010 - 2011
Phase 1 - Critical Design	\$25	2012 – 2013
Phase 2 - Final Design, Data Communications Subsystem & Fiber Backbone Installation	\$51	2013 – 2015
Phase 3 / 4 - Installation, Testing, Commissioning	\$150	2014 – 2016 (Revenue service December 2015)
Total	\$231	

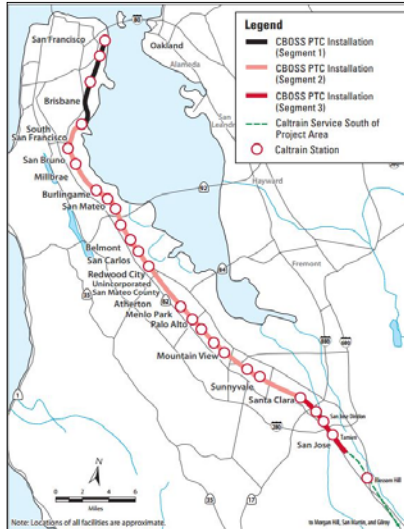
Installation

Construction South to North

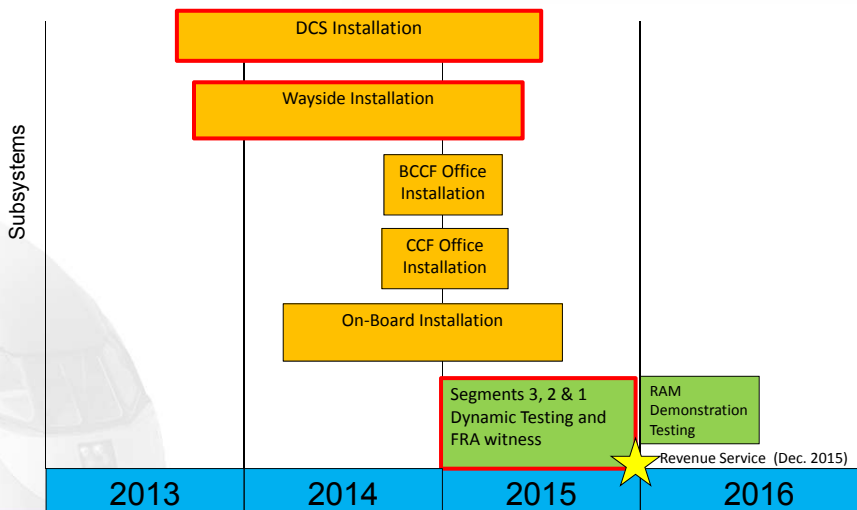
- Segment 3 (8 miles)**
- SJ
- Santa Clara (S of Lafayette St)

- Segment 2 (36 miles)**
- Santa Clara (N of Lafayette St)
- Sunnyvale
- Mountain View
- Palo Alto
- Menlo Park
- Atherton
- Redwood City
- SMC
- San Carlos
- Belmont
- San Mateo
- San Bruno
- SSF (S of Oyster Point)

- Segment 1 (8 miles)**
- SSF (N of Oyster Point)
- Brisbane
- SF



Milestones (Entire Corridor)



Note: Red frame, public may notice activity

Data Communications Subsystem (DCS)*

- Potholing, boring, conduit, fiber, base stations
- Segment 3: 100% complete
- Remaining work: San Mateo, San Bruno, San Francisco (including tunnels)



Potholing



Preparing to install fiber

* Public may notice activity

Wayside*

- Modules installed at key system points, work includes associated gate activity
- 100% complete



* Public may notice activity

(Backup) Central Control Facility

- Modify BCCF space and install equipment
- BCCF Work: 100% complete
- CCF: Connectivity to BCCF established
- Preparing for testing of control center functions

Onboard Equipment

- Install vehicles with equipment at CEMOF as part of regular maintenance
- Vehicle Installation: 74% complete



Onboard Equipment



Simulator for training

Testing

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Testing (Static & Dynamic*)

- Ongoing verification / validation
- DAX Testing
 - Test specific roadway crossings; train travels 4 miles either side of crossing to reach full speed
 - Notification sent prior to work
 - All segments: 100% complete
- Field Integration Testing (FIT) Preparation
 - Testing all components with train
 - Multiple nights a week; ~3-4 hours per night
 - Scheduled testing begin S to N: Summer 2015
 - Notification will be sent prior to work

* Public may notice activity

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Testing Continued

- Federal Railroad Administration (FRA) Testing
 - At FRA's discretion, onsite visit
 - Could start summer 2015
- Reliability & Maintainability (RAM) Demonstrations Testing
 - In-service monitoring of how the system performs
 - Scheduled January to June 2016

Public Outreach

Outreach To Date

- Activities
 - CSCG (7 meetings)
 - LPMG (5 meetings, next 6/25/15)
 - One-on-one (each of the 17 cities/3 counties)
 - Community Groups, as requested (8 meetings)
- Communication tailored to location
 - Direct mailers (40), flyers stations
 - Website, social media, email, phone
 - City/County staff coordination



Complaints (since Sept. 2013)

- First 12 months
 - 5 people (noise, foliage disturbed, mud on street)
 - General questions about the project
- Next 15 months
 - 3 people (noise)
 - General questions about the project

Next Steps

- Activities
 - Community Groups Meetings (as requested)
- Communication
 - Direct mailer residents
 - Website, social media, email, phone
 - Separate installation and testing notices
- Ongoing City/County staff coordination

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Questions

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