Advanced Signal System Update (CBOSS PTC)

LPMG Meeting
June 25, 2015

CBOSS PTC Video
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
# Project Total Cost and Milestones

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost (in millions)</th>
<th>Milestones</th>
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</thead>
<tbody>
<tr>
<td>Project Planning and Procurement</td>
<td>$5</td>
<td>2010 - 2011</td>
</tr>
<tr>
<td>Phase 1 - Critical Design</td>
<td>$25</td>
<td>2012 – 2013</td>
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<tr>
<td>Phase 2 - Final Design, Data Communications Subsystem &amp; Fiber Backbone Installation</td>
<td>$51</td>
<td>2013 – 2015</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$231</strong></td>
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## 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

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**Milestones (Entire Corridor)**

- DCS Installation
- Wayside Installation
  - BCCF Office Installation
  - CCF Office Installation
- On-Board Installation
- Segments 3, 2 & 1 Dynamic Testing and FRA witness
- RAM Demonstration Testing
- Revenue Service (Dec. 2015)

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
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<tbody>
<tr>
<td>Note: Red frame, public may notice activity</td>
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Data Communications Subsystem (DCS)*

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

Wayside*

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

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
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

Questions