Peninsula Corridor Electrification Update Meeting
San Francisco Community Meeting
August 21, 2018

Agenda

• Caltrain System Overview
• Project Overview
• Electric Multiple Unit (EMU) Design
• San Francisco Construction Activities
• Questions
Caltrain System

- 32 Stations Gilroy to San Francisco
- 92 Weekday Trains
- At-Grade Crossings, viaducts, and bridges
- Intermodal Connections
- Bike Commuters

JBP owns right-of-way from SF to San Jose

Union Pacific owns

RIDERSHIP

AVERAGE DAILY RIDERSHIP

1998 2018
At Capacity Today

Bi-directional commute with riders standing on trains going southbound and northbound

Aging Fleet

<table>
<thead>
<tr>
<th>SERIES</th>
<th>QUANTITY</th>
<th>NUMBER OF STARTS</th>
<th>YEAR OF MANUFACTURE</th>
<th>MAKE</th>
<th>RETIRE DATE</th>
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<td>1990-2000</td>
<td>Nippon Sharyo</td>
<td>2020</td>
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<td>1985-1987</td>
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<td>2016-2017</td>
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<td>78</td>
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<td>2020</td>
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<td>97</td>
<td>1985</td>
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<td>140</td>
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<td>Bombardier</td>
<td>2036</td>
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</table>

*Trailers recently acquired from Metrolink with refurbishment ongoing.

At Retirement Age: 20/29 loco; 73/134 cars
Regional Transportation Needs

- US 101 and Interstate 280 Congested
- Corridor supports growing economy
- 75% Caltrain riders commute to work
- 60% are choice riders

Project Description

<table>
<thead>
<tr>
<th>Area</th>
<th>Project</th>
<th>Service</th>
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<tbody>
<tr>
<td>51 miles San Francisco to San Jose (Tamien Station)</td>
<td>Electrification:</td>
<td>Up to 79 mph Service Increase</td>
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<tr>
<td></td>
<td>• Overhead Contact System (OCS)</td>
<td>• 6 trains / hour / direction</td>
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<tr>
<td></td>
<td>• Traction Power Facilities</td>
<td>• More station stops / reduced travel time</td>
</tr>
<tr>
<td></td>
<td>Electric Trains (EMUs)</td>
<td>• Restore Atherton &amp; Broadway service</td>
</tr>
<tr>
<td></td>
<td>• 75 percent of fleet</td>
<td>Mixed-fleet service (interim period)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Continue tenant service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ACE, Capital Corridor, Amtrak, Freight</td>
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Service Benefits

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<tr>
<th>Metric</th>
<th>Today</th>
<th>PCEP</th>
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<tr>
<td>Example Baby Bullet Train</td>
<td></td>
<td></td>
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<tr>
<td>Retain 5-6 stops</td>
<td>60 minutes</td>
<td>45 minutes</td>
</tr>
<tr>
<td>Retain SF to SJ 60 minutes</td>
<td>6 stops</td>
<td>13 stops</td>
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<tr>
<td>Example Redwood City Station</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train stops / peak hour</td>
<td>3</td>
<td>5</td>
</tr>
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</table>

Note: Prototypical Train and Schedule

Key Regional Benefits (2040)

- **Greenhouse Gases Annual**: 176,000 metric tons of CO₂
- **Daily Traffic Congestion**: 619,000 vehicle miles
- **Engine Noise Reduced**
- **Cut to Up to 97%**
- **Clean Air Daily**: 111,000
- **Improved Frequency / Quicker Trips**

Note: 2013 BAC Report, generates $2.5B economic activity and 9,600 jobs
Electric Train

- 2016 Capacity Board Decision (bike to seat ratio, onboard bathrooms, upper doors ‘not precluded’)
- 2017 Design Progressed w/ Additional Public Input (exterior design, seat colors, bike storage, ADA restroom)
- 2018 Virtual Reality 360 Tour
Electric Train Exterior Design
Public Poll

<table>
<thead>
<tr>
<th>EXTERIOR DESIGN POLL RESULTS</th>
<th>6331 TOTAL VOTES</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>2665</td>
</tr>
<tr>
<td>2</td>
<td>834</td>
</tr>
<tr>
<td>3</td>
<td>1580</td>
</tr>
<tr>
<td>4</td>
<td>1272</td>
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</table>

WINNING DESIGN: OPTION 1
Electric Train Seat Design

WINNING DESIGN: OPTION B

SEAT POLL RESULTS

<table>
<thead>
<tr>
<th>Option</th>
<th>Votes</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>1007</td>
</tr>
<tr>
<td>B</td>
<td>1532</td>
</tr>
</tbody>
</table>

2549 TOTAL VOTES

A: 39.7%
B: 60.3%

Electric Train Onboard Bike Storage Outreach

Thanks to everyone at Caltrain for helping test out our bike options!

Remember to vote on calmodtrain.com
Construction Phasing

- 51 Miles Corridor
- 4 Work Segments
- 3,000 Poles
- 10 Traction Power Facilities

San Francisco – Work Segment 1

San Francisco Work Area 4.9 miles
Field Work Status

Pre-Construction Work Completed

- Utility Survey
- Geotechnical Investigations
- Disposal of Soil from Geotechnical Investigations
- Soil Resistivity Testing
- Site Surveys
- Signal Cable Inspections

Pre-Construction Work In Progress

- Foundation Potholing

Future Work

- Tunnel Work
- Tree Pruning and Removal
- Foundation Installation
- Overhead Contact System Pole Installation
- Overhead Contact System Wire Installation
- Paralleling Stations

Future Construction Timeline

San Francisco

<table>
<thead>
<tr>
<th>Date</th>
<th>Work Activity</th>
<th>Expected Duration*</th>
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</thead>
<tbody>
<tr>
<td>Summer 2018</td>
<td>Potholing</td>
<td>3-4 months</td>
</tr>
<tr>
<td>Fall 2018</td>
<td>Tunnel Work</td>
<td>7-8 months</td>
</tr>
<tr>
<td>Winter 2018</td>
<td>Tree Pruning/Removal</td>
<td>1-2 months</td>
</tr>
<tr>
<td>Spring 2019</td>
<td>Foundation Installation</td>
<td>2-3 months</td>
</tr>
<tr>
<td>Summer 2019</td>
<td>Pole/Wire Installation</td>
<td>4-5 months</td>
</tr>
<tr>
<td>Summer 2019</td>
<td>Paralleling Station</td>
<td>3-5 months</td>
</tr>
</tbody>
</table>

*Expected duration indicates first and last day of activity. Number of actual work days will be fewer.
Potholing

Approx. 270 Potholes in San Francisco

San Francisco Tunnel Work

- Work on the four San Francisco Tunnels:
  - Overhead Contact System Installation
  - Grouting and Notching
  - Drainage and Track Work
- September 2018 through March 2019
- 24 hour weekend work
Caltrain Service During Tunnel Work

- Weekends - Oct 6, 2018 to March 17, 2019
  - Caltrain service north of the Bayshore Station will be suspended on 24 consecutive weekends
  - Bus service will be provided from Bayshore to 4th and King and 22nd Street stations
- Caltrain weekday service will remain unchanged
- Caltrain service south of Bayshore will remain unchanged
- Bus schedule will be available in September

Tree Pruning and Replacement

Vegetation cleared for Electrical Safety Zone
City and County of San Francisco: Tree Pruning and Replacement Plan

<table>
<thead>
<tr>
<th></th>
<th>Caltrain Right of Way</th>
<th>Public Property</th>
<th>Private Property</th>
</tr>
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<tbody>
<tr>
<td>Trees Removed</td>
<td>8</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Trees Pruned &gt;25%</td>
<td>6</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Trees Pruned &lt;25%</td>
<td>10</td>
<td>2</td>
<td>0</td>
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</tbody>
</table>

52 Trees will be replaced per the San Francisco Tree Replacement Plan

Note: Information may change as the design progresses

Foundation Installation

- Excavation
- Rebar and Anchor Installation
- Electrical Grounding
- Concrete Fill
Foundation Installation

Pole Installation

- 3,000 Installed throughout Corridor
  - Approx. 250 poles in San Francisco
- Pole Height: 30-45.5’
- Pole Spacing: ~180’ apart
Pole Installation

Stringing Wire

On-track Equipment
**Traction Power Facilities**

- 10 Traction Power Facilities Installed throughout Corridor
  - 2 Paralleling Stations installed in San Francisco
  - Gantry structures up to 50’
- Provides electrical power to trains through the Overhead Contact System (OCS)
- Unmanned station
- Day and weekend construction work
- Limited night work during construction

**Construction Impacts**

- Daytime work and night work from 8 p.m. - 6 a.m.
- Some 24 hour/day work on weekends
- Crews will utilize acoustical barrier blankets and position lights away from homes
- Dedicated hotline for construction complaints
Public Outreach

• Subscribe to Weekly Updates
  – Visit www.calmod.org/get-involved

• Additional Community Meetings Before:
  – Pole and Wire Installation
  – Paralleling Station Construction

• Social Media

• Construction Outreach Office

Public Outreach

Physical Notices
CALMOD CONTACT INFORMATION

WEBSITE 🌐 CalMod.org

EMAIL 📧 CalMod@caltrain.com

PHONE 📞 650-399-9659
          800-660-4287 (Toll Free)

OFFICE 📍 2121 S. El Camino, Suite A-100
            San Mateo, CA 94403
            9 a.m. - 5 p.m. Monday - Friday

FACEBOOK 💻 www.facebook.com/caltrain

TWITTER 🍩 @caltrain