Caltrain Electrification Update
Sunnyvale Community Meeting
September 17, 2018

Agenda

• Caltrain System Overview
• Project Overview
• Electric Train Design
• Sunnyvale Construction Activities
• Questions
Caltrain System

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

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

Union Pacific owns

Ridership
At Capacity Today

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

Aging Fleet

<table>
<thead>
<tr>
<th>Serries</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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<tbody>
<tr>
<td>Locomotives</td>
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<td>1985-1987</td>
<td>Nippon Sharyo</td>
<td>2015-2017</td>
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<td>1999-2000</td>
<td>Nippon Sharyo</td>
<td>2015-2017</td>
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<td>97</td>
<td>1985</td>
<td>Nippon Sharyo</td>
<td>2015-2017</td>
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<td>Bi-Level Trailer*</td>
<td>16</td>
<td>149</td>
<td>1997</td>
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<td>140</td>
<td>2008</td>
<td>Bombardier</td>
<td>2036</td>
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</tbody>
</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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</thead>
<tbody>
<tr>
<td>51 miles</td>
<td>Electrification:</td>
<td>Up to 79 mph</td>
</tr>
<tr>
<td>San Francisco to San Jose</td>
<td>• Overhead Contact System (OCS)</td>
<td>Service Increase</td>
</tr>
<tr>
<td>(Tamien Station)</td>
<td>• Traction Power Facilities</td>
<td>• 6 trains / hour / direction</td>
</tr>
<tr>
<td></td>
<td>Electric Trains</td>
<td>• More station stops / reduced travel time</td>
</tr>
<tr>
<td></td>
<td>• 75 percent of fleet</td>
<td>• Restore Atherton &amp; Broadway service</td>
</tr>
<tr>
<td></td>
<td>Mixed-fleet service (interim period)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continue tenant service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• ACE, Capital Corridor, Amtrak, Freight</td>
<td></td>
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Service Benefits

<table>
<thead>
<tr>
<th>Metric</th>
<th>Today</th>
<th>PCEP</th>
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<tbody>
<tr>
<td>Example Baby Bullet Train</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retain 5-6 stops</td>
<td>60 minutes</td>
<td>45 minutes</td>
</tr>
<tr>
<td>Retain SF to SJ</td>
<td>6 stops</td>
<td>13 stops</td>
</tr>
<tr>
<td>60 minutes</td>
<td></td>
<td></td>
</tr>
<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>
</tbody>
</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
- Up to 97% clean air daily
- 111,000 ridership daily
- Improved frequency / quicker trips

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

MILESTONES

- Caltrain strategic plan makes electrification a priority
- Environmental Clearance
- Award Contract
- Groundbreaking
- First Electric Train Arrives
- Passenger Service with Electric Trains
- Additional Capacity Improvements

• Electrification Infrastructure Construction
• Final System Testing

Note: Schedule Subject to Change

Electric Train

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

EXTERIOR DESIGN POLL RESULTS
6331 TOTAL VOTES

1. Option 1: 2665 votes (42.1%)
2. Option 2: 814 votes (12.9%)
3. Option 3: 1580 votes (25%)
4. Option 4: 1272 votes (20.1%)

WINNING DESIGN: OPTION 1
Electric Train Seat Design

WINNING DESIGN: OPTION B

SEAT POLL RESULTS

A 1007
B 1520
2549 TOTAL VOTES

A 39.7%
B 60.3%

Electric Train Onboard Bike Storage Outreach
Construction Phasing

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

Sunnyvale – Work Segment 3

Sunnyvale Work Area 4 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

- Tree Pruning and Removal
- Foundation Installation
- Overhead Contact System Pole Installation
- Overhead Contact System Wire Installation
- Paralleling Station

Future Construction Activities

Sunnyvale

<table>
<thead>
<tr>
<th>Date</th>
<th>Work Activity</th>
<th>Expected Duration*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer/Fall 2018</td>
<td>Potholing</td>
<td>2-3 months</td>
</tr>
<tr>
<td>Fall 2018</td>
<td>Tree Pruning/Removal</td>
<td>2-3 months</td>
</tr>
<tr>
<td>Spring 2019</td>
<td>Foundation Installation</td>
<td>2-4 months</td>
</tr>
<tr>
<td>Summer/Fall 2019</td>
<td>Pole/Wire Installation</td>
<td>4-5 months</td>
</tr>
<tr>
<td>Summer/Fall 2019</td>
<td>Paralleling Station Construction</td>
<td>4-6 months</td>
</tr>
</tbody>
</table>

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

Approx. 325 Potholes Sunnyvale

Tree Pruning and Replacement

Vegetation cleared for Electrical Safety Zone

Note: This figure depicts worst case scenarios vegetation clearance with side poles
City of Sunnyvale: Tree Pruning and Replacement Plan

<table>
<thead>
<tr>
<th>City of Sunnyvale</th>
<th>Caltrain Right of Way</th>
<th>Public Property</th>
<th>Private Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees Removed</td>
<td>85</td>
<td>1</td>
<td>45</td>
</tr>
<tr>
<td>Trees Pruned &gt;25%</td>
<td>133</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>Trees Pruned &lt;25%</td>
<td>148</td>
<td>5</td>
<td>101</td>
</tr>
</tbody>
</table>

304 Trees will be replaced per the Sunnyvale Tree Replacement Plan

Note: Information may change as the design progresses

Foundation Construction

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

Pole Installation

• 3,000 Installed throughout Corridor
  • Approx. 250 Poles in Sunnyvale
• Pole Height: 30-45.5’
• Pole Spacing: ~180’ apart
Pole Installation

Current Pole Installation

Stringing Wire

On-track Equipment
Traction Power Facilities

- 10 Traction Power Facilities Installed throughout Corridor
  - 1 Paralleling Station installed in Sunnyvale
  - Gantry structures up to 50’
- Provides electrical power to trains through the Overhead Contact System
- Unmanned station
- Day and weekend construction work
- Limited night work during construction

Construction Impacts

- Work will occur during day and night
- Some 24 hour weekend work
- Crews will utilize acoustical barrier blankets and position lights away from homes
- Dedicated hotline for construction complaints
San Francisco Tunnel Work

• Within the four San Francisco Tunnels:
  – Overhead Contact System Installation
  – Grouting and Notching
  – Drainage and Track Work
• Pre-construction: September 2019

SF Weekend Caltrain Closures

• Weekends - Oct 6, 2018 to Spring 2019
  – Caltrain service north of the Bayshore Station will be suspended on the weekends
  – Bus service will be provided from Bayshore to 4th and King and 22nd Street stations
• Weekday service will remain unchanged
• Caltrain service south of Bayshore will remain unchanged
• Bus schedule will be available in September
Public Outreach

• Subscribe to Weekly Updates
  – Visit [www.calmod.org/get-involved](http://www.calmod.org/get-involved)

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

• Social Media

• Construction Outreach Office

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Public Outreach

Physical Notices
CALMOD CONTACT INFORMATION

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