Peninsula Corridor Electrification Update Meeting
Menlo Park Community Meeting
February 28, 2018

Agenda

• Caltrain System Overview
• Project Overview
• Electric Multiple Unit (EMU) Design
• Menlo Park 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

Ridership

Average Daily Ridership

20,000 25,000 30,000 35,000 40,000 45,000 50,000 55,000 60,000 65,000

Union Pacific owns
At Capacity Today

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

Aging Fleet

Table 1.2: Caltrain Fleet Inventory

<table>
<thead>
<tr>
<th>SERIES</th>
<th>QUANTITY</th>
<th>NUMBER OF SEATS</th>
<th>YEAR OF MANUFACTURE</th>
<th>MAKE</th>
<th>RETIRE DATE</th>
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</thead>
<tbody>
<tr>
<td>Locomotives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F40PH-2</td>
<td>5</td>
<td>na</td>
<td>1965</td>
<td>GM - EMD</td>
<td>2015</td>
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<td>F40PH-2(C)</td>
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<td>1965-1967</td>
<td>GM - EMD</td>
<td>2015-2017</td>
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<tr>
<td>F40PH-2C</td>
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<tr>
<td>MP36PH-3C</td>
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<td>na</td>
<td>2003</td>
<td>Motive Power</td>
<td>2033</td>
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<tr>
<td>Passenger Cars</td>
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<tr>
<td>Gallery Trailer</td>
<td>14</td>
<td>120</td>
<td>1999-2000</td>
<td>Nippon Sharyo</td>
<td>2030</td>
</tr>
<tr>
<td>Gallery Cab (Bi)</td>
<td>10</td>
<td>108</td>
<td>1985-1987</td>
<td>Nippon Sharyo</td>
<td>2015-2017</td>
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<tr>
<td>Gallery Cab (Bi)</td>
<td>6</td>
<td>78</td>
<td>1999-2000</td>
<td>Nippon Sharyo</td>
<td>2030</td>
</tr>
<tr>
<td>Gallery Cab (Bi)</td>
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<td>97</td>
<td>1985</td>
<td>Nippon Sharyo</td>
<td>2015</td>
</tr>
<tr>
<td>Bi-Level Trailer*</td>
<td>15</td>
<td>149</td>
<td>1997</td>
<td>Bombardier</td>
<td>2027</td>
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<tr>
<td>Bi-Level Trailer</td>
<td>9</td>
<td>144</td>
<td>2002</td>
<td>Bombardier</td>
<td>2032</td>
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<tr>
<td>Bi-Level Trailer (Bi)</td>
<td>2</td>
<td>114</td>
<td>2002</td>
<td>Bombardier</td>
<td>2032</td>
</tr>
<tr>
<td>Bi-Level Trailer (Bi)</td>
<td>5</td>
<td>114</td>
<td>2001-2002</td>
<td>Bombardier</td>
<td>3031-3033</td>
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<tr>
<td>Bi-Level Trailer (Bi)</td>
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<td>114</td>
<td>2008</td>
<td>Bombardier</td>
<td>2036</td>
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<tr>
<td>Bi-Level Trailer (Bi)</td>
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<td>2032</td>
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<td>140</td>
<td>2008</td>
<td>Bombardier</td>
<td>2036</td>
</tr>
</tbody>
</table>

*Trailers recently acquired from Metrolink with refurbishment ongoing.
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>
</tr>
</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 (EMUs)</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></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>
</tr>
</tbody>
</table>
## Service Benefits

<table>
<thead>
<tr>
<th>Metric</th>
<th>Today</th>
<th>PCEP</th>
</tr>
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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 60 minutes</td>
<td>6 stops</td>
<td>13 stops</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**: 111,000
- **Clean Air Daily**: Up to 97%
- **Ridership Daily**: Improved frequency / quicker trips
- **More Service**:

Note: 2013 BAC Report, generates $2.5B economic activity and 9,600 jobs
Electric Train Design & Public Input
Peninsula Corridor Electrification Project
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

<table>
<thead>
<tr>
<th>DESIGN POLL RESULTS</th>
<th>TOTAL VOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2665</td>
</tr>
<tr>
<td>2</td>
<td>814</td>
</tr>
<tr>
<td>3</td>
<td>1580</td>
</tr>
<tr>
<td>4</td>
<td>1272</td>
</tr>
</tbody>
</table>

- 1: 42.1%
- 2: 12.9%
- 3: 25%
- 4: 20.1%
Electric Train Exterior Design

WINNING DESIGN: OPTION 1

Electric Train Seat Design

WINNING DESIGN: OPTION B

SEAT POLL RESULTS

A 1007
B 538

2549 TOTAL VOTES

A 39.7%
B 60.3%
Electric Train Onboard Bike Storage Outreach

Station Outreach with Samples: August 8 to September 1

CalMod

Electric Train Onboard Bike Storage Outreach

FEEDBACK COLLECTION PROCESS

- BICYCLE ADVISORY COMMITTEE (BAC)
- BIKE COALITION INPUT
- ONLINE BIKE POLL
- STATION OUTREACH
- RIDER COMMENTS
Electric Train
Onboard Bike Storage Design

- Maximizes capacity
- Accommodates variety of bike types
- Recommended by:
  - Bicycle Advisory Committee
  - Bike Coalitions (SF and Silicon Valley)

Construction Activities
Construction Phasing

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

Segments 2 & 4 followed by 1 & 3

Menlo Park – Work Segments 2 & 3

Menlo Park Work Segment 2 Area .9 miles
Menlo Park Work Segment 3 Area .7 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

- **Work In Progress**
  - Foundation Potholing
  - Tree Pruning and Removal

- **Future Work**
  - Foundation Construction
  - Overhead Contact System Pole Installation
  - Overhead Contact System Wire Installation

### Future Construction Activities

**Menlo Park**

<table>
<thead>
<tr>
<th>Date</th>
<th>Work Activity</th>
<th>Expected Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2018</td>
<td>Potholing</td>
<td>1-2 months</td>
</tr>
<tr>
<td>Spring 2018</td>
<td>Tree Pruning/Removal</td>
<td>1-2 months</td>
</tr>
<tr>
<td>Late Summer 2018</td>
<td>Foundation Construction</td>
<td>1-2 months</td>
</tr>
<tr>
<td>Late 2018</td>
<td>Pole/Wire Installation</td>
<td>1-2 months</td>
</tr>
</tbody>
</table>

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

Tree Pruning and Replacement

Vegetation cleared for Electrical Safety Zone
City of Menlo Park: Tree Pruning and Replacement Plan

<table>
<thead>
<tr>
<th>City of Menlo Park</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Caltrain Right of Way</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>Trees Removed</td>
</tr>
<tr>
<td>Trees Pruned &gt;25%</td>
</tr>
<tr>
<td>Trees Pruned &lt;25%</td>
</tr>
</tbody>
</table>

115 Trees will be replaced per the Menlo Park Tree Replacement Plan

Note: Information may change as the design progresses

Foundation Construction

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

On and Off Track Equipment

Pole Information

• 51 poles in Menlo Park
• Menlo Park Pole Types*
  – Single Track Cantilever (30’-35’ height)
  – Two-Track Cantilever (45.6’ height)
  – Center Poles (30’-35’ height)
• Pole Spacing: ~180’ apart

* Currently 65% Design
Pole Installation Menlo Park

Single Track Cantilever  Two Track Cantilever  Center

Example of Poles Currently Planned for Use in Menlo Park

Stringing Wire

On-track Equipment
Construction Impacts

- Daytime work and night work from 8 p.m.- 6 a.m.
- Some 24 hour weekend work
- 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
- Additional Community Meetings
  - Pole and Wire Installation
- Social Media
- Construction Outreach Office
Public Outreach

• Physical Notices

Construction Contact Information

Email: calmod@caltrain.com
Phone: 650.399.9659
Toll Free: 800.660.4287

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www.calmod.org