Caltrain Electrification Update
Redwood City and North Fair Oaks Meeting
November 28, 2018

Agenda

• Project Overview Recap
• Project Update
• Electrification Infrastructure
  – Redwood City and North Fair Oaks Activities
• Questions
Caltrain System

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

Ridership

Average daily ridership from 1998 to 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 SEATS</th>
<th>YEAR OF MANUFACTURE</th>
<th>MAKE</th>
<th>RETIRE DATE</th>
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</thead>
<tbody>
<tr>
<td>F40PH-2</td>
<td>5</td>
<td>na</td>
<td>1985</td>
<td>GM - EMD</td>
<td>2015</td>
</tr>
<tr>
<td>F40PH-2C</td>
<td>3</td>
<td>na</td>
<td>1998</td>
<td>Gibbs Locomotive</td>
<td>2020</td>
</tr>
<tr>
<td>M6-60PH-3C</td>
<td>6</td>
<td>na</td>
<td>2003</td>
<td>Motive Power</td>
<td>2033</td>
</tr>
</tbody>
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Passenger Cars

| Gallery Trailer | 14   | 120  | 1999-2000 | Nippon Sharyo | 2030       |
| Gallery Cab (Bike) | 10  | 188  | 1985-1987 | Nippon Sharyo | 2015-2017 |
| Gallery Cab (Bike) | 6   | 79   | 1999-2000 | Nippon Sharyo | 2030       |
| Gallery Cab (Bike) | 21  | 97   | 1985      | Nippon Sharyo | 2015       |
| Bi-Level Trailer* | 16  | 149  | 1997      | Bombardier    | 2027       |
| Bi-Level Trailer | 12   | 144  | 2002      | Bombardier    | 2032       |
| Bi-Level Trailer (Bike) | 2   | 114  | 2002      | Bombardier    | 2032       |
| Bi-level Trailer (Bike) | 5  | 114  | 2001-2002 | Bombardier    | 2031-2032 |
| Bi-level Trailer (Bike) | 2  | 114  | 2008      | Bombardier    | 2038       |
| Bi-level Trailer (Bike) | 1   | 127  | 2003      | Bombardier    | 2032       |
| Bi-Level Trailer | 6   | 140  | 2008      | Bombardier    | 2038       |

*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>
</tr>
</thead>
</table>
| 51 miles San Francisco to San Jose (Tamien Station) | Electrification:  
  • Overhead Contact System (OCS)  
  • Traction Power Facilities  
  Electric Trains  
  • 75 percent of fleet | Up to 79 mph  
  Service Increase  
  • 6 trains / hour / direction  
  • More station stops / reduced travel time  
  • Restore Atherton & Broadway service  
  Mixed-fleet service (interim period)  
  Continue tenant service  
  • ACE, Capitol Corridor, Amtrak, Freight |
### 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 min</td>
<td>45 min</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
- **Clean Air Daily**: Up to 97%
- **Ridership Daily**: 111,000
- **More Service**: Improved frequency / quicker trips

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

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
- 2019 Virtual Reality 360 Tour
CalMod Construction Phasing

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

Redwood City and North Fair Oaks

Redwood City & North Fair Oaks Project Area 2.8 miles
Field Work Progression

Work Completed
- Utility Survey
- Geotechnical Investigations
- Disposal of Soil from Geotechnical Investigations
- Soil Resistivity Testing
- Site Surveys
- Signal Cable Inspections
- Tree Pruning/Removal

Work In Progress
- Potholing
- Foundation Installation

Future Work
- Pole Installation
- Wire Installation
- Switching Station Construction

Future Construction Activities

<table>
<thead>
<tr>
<th>Date</th>
<th>Work Activity</th>
<th>Expected Duration*</th>
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</thead>
<tbody>
<tr>
<td>In Progress</td>
<td>Potholing</td>
<td>2-3 months</td>
</tr>
<tr>
<td>In Progress</td>
<td>Foundation Construction</td>
<td>3-4 months</td>
</tr>
<tr>
<td>Late 2018</td>
<td>Pole Installation</td>
<td>2-3 months</td>
</tr>
<tr>
<td>Spring 2019</td>
<td>Wire Installation</td>
<td>2-3 months</td>
</tr>
<tr>
<td>Early 2019</td>
<td>Switching Station Construction</td>
<td>9-12 months</td>
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</tbody>
</table>

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

On Track Equipment

Pole Information

• 3,000 Installed throughout Corridor
  • 104 poles in Redwood City
  • 56 poles in North Fair Oaks
• Pole Height: 30-50’
• Pole Spacing: ~180’ apart
Pole Types Redwood City

- Single Track Cantilever
- Two-Track Cantilever
- Portals

Example of Poles Currently Planned for Use in Redwood City and North Fair Oaks

Pole Installation

Current Pole Installation
Stringing Wire

4 overhead wires per track: Feeder, Contact, Messenger, and Static

Traction Power Facilities

• 10 Traction Power Facilities Installed throughout Corridor
  - 1 Switching Station installed in Redwood City
  - Gantry structures up to 50'

• Provides and distributes electrical power to trains through the Overhead Contact System

• Unmanned, secure, lighted station

• Day and weekend construction work

• Limited night work during construction
Switching Station Location

Caltrain Track Materials Yard south of Woodside Road

Switching Station Details

Control House

Transformers

Gantries
Example Switching/Parallel Stations

Examples from Amtrak Northeast Corridor

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

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
- Schedule at caltrain.com/SFWeekendClosure
Public Outreach

• Subscribe to Weekly Updates
  – Visit www.calmod.org/get-involved
• Social Media
• Construction Outreach Office

Physical Notices
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