Agenda

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

- 10,000
- 20,000
- 30,000
- 40,000
- 50,000
- 60,000
- 70,000

1998
2018
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 SCATS</th>
<th>YEAR OF MANUFACTURE</th>
<th>MAKE</th>
<th>RETIRE DATE</th>
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</thead>
<tbody>
<tr>
<td><strong>Locomotives</strong></td>
<td></td>
<td></td>
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<tr>
<td>F40 PH-2</td>
<td>5</td>
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<td>1985</td>
<td>GM - EMD</td>
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<td>F40 PH-2C</td>
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<td>MP36PH-3C</td>
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<td>2003</td>
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<tr>
<td><strong>Passenger Cars</strong></td>
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<td></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 (Bike)</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 (Bike)</td>
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<td>78</td>
<td>1999-2000</td>
<td>Nippon Sharyo</td>
<td>2030</td>
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<tr>
<td>Gallery Cab (Bike)</td>
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<td>97</td>
<td>1985</td>
<td>Nippon Sharyo</td>
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<tr>
<td>Bi-Level Trailer*</td>
<td>16</td>
<td>149</td>
<td>1997</td>
<td>Bombardier</td>
<td>2027</td>
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<tr>
<td>Bi-Level Trailer</td>
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<td>144</td>
<td>2002</td>
<td>Bombardier</td>
<td>2032</td>
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<tr>
<td>Bi-level Trailer (Bike)</td>
<td>2</td>
<td>114</td>
<td>2002</td>
<td>Bombardier</td>
<td>2032</td>
</tr>
<tr>
<td>Bi-level Trailer (Bike)</td>
<td>5</td>
<td>114</td>
<td>2001-2002</td>
<td>Bombardier</td>
<td>2031-2032</td>
</tr>
<tr>
<td>Bi-level Trailer (Bike)</td>
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<td>114</td>
<td>2008</td>
<td>Bombardier</td>
<td>2038</td>
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<tr>
<td>Bi-level Trailer (Bike)</td>
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<td>2002</td>
<td>Bombardier</td>
<td>2032</td>
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<tr>
<td>Bi-Level Trailer</td>
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<td>140</td>
<td>2008</td>
<td>Bombardier</td>
<td>2038</td>
</tr>
</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>
</tr>
</thead>
</table>
| 51 miles | Electrification:  
- Overhead Contact System (OCS)  
- Traction Power Facilities  
Electric Trains (EMUs)  
- 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, Capital Corridor, Amtrak, Freight |
## Service Benefits

<table>
<thead>
<tr>
<th>Metric</th>
<th>Today</th>
<th>PCEP</th>
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</thead>
<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
- Up to 97% clean air daily
- 111,000 ridership daily
- More service
- 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 Progressing w/ Additional Public Input
  - Completed: Exterior design, Seat colors, Bike Storage, ADA restroom

• 2018 Virtual Reality 360 Tour
• 51 Miles Corridor
• 4 Work Segments
• 3,000 Poles
• 10 Traction Power Facilities
Brisbane – Work Segment 1

Brisbane Work Area 2.7 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 |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Construction Work In Progress</td>
<td>• Foundation Potholing</td>
</tr>
</tbody>
</table>
| Future Work | • Tree Pruning and Removal  
• Foundation Installation  
• Overhead Contact System Pole Installation  
• Overhead Contact System Wire Installation |
Potholing
## Future Construction Timeline

**Brisbane**

<table>
<thead>
<tr>
<th>Date</th>
<th>Work Activity</th>
<th>Expected Duration*</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 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>Spring 2019</td>
<td>Tree Pruning/Removal</td>
<td>1-2 months</td>
</tr>
<tr>
<td>Fall 2019</td>
<td>Foundation Installation</td>
<td>2-3 months</td>
</tr>
<tr>
<td>Winter 2019</td>
<td>Pole/Wire Installation</td>
<td>4-5 months</td>
</tr>
<tr>
<td>Summer 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.*
Tree Pruning and Replacement

Vegetation cleared for Electrical Safety Zone

Vegetation Clearance Zone:
- No vegetation overhang beyond trim lines or within 10 feet of electrical components.

Note: Tree pruning will be done in compliance with ANSI Z133 standards and best practices, therefore limb cuts will be made beyond the vegetation trim line, as determined by the project Certified Arborist.

Overhead Contact System/ New Electrification Infrastructure

Cross Section View

Note: This figure depicts worst case scenario vegetation clearance with side poles.

Limb cuts
# City of Brisbane: Tree Pruning and Replacement Plan

<table>
<thead>
<tr>
<th></th>
<th>City of Brisbane</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Caltrain Right of Way</td>
</tr>
<tr>
<td>Trees Removed</td>
<td>0</td>
</tr>
<tr>
<td>Trees Pruned &gt;25%</td>
<td>3</td>
</tr>
<tr>
<td>Trees Pruned &lt;25%</td>
<td>8</td>
</tr>
</tbody>
</table>

3 Trees will be replaced per the Brisbane Tree Replacement Plan

Note: Information may change as the design progresses
Foundation Construction

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

- 3,000 Installed throughout Corridor
  - Brisbane Design In Progress
- 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 in Bayshore Station Parking Lot
  - 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
Project 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

• Work on the four San Francisco Tunnels:
  – Grouting and Notching
  – Drainage and Track Work
  – Overhead Contact System Installation

• Pre-Construction Starts in September 2018
Caltrain Service During Tunnel Work

- Weekends - Oct 6, 2018 to March 17, 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 mid-September
Public Outreach

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

• Social Media

• Construction Outreach Office
CALMOD CONTACT INFORMATION

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