



Caltrain Electrification Update

Redwood City and North Fair Oaks Meeting
November 28, 2018



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Agenda

- Project Overview Recap
- Project Update
- Electrification Infrastructure
 - Redwood City and North Fair Oaks Activities
- Questions



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Caltrain System

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

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

Union Pacific owns

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Ridership

AVERAGE DAILY RIDERSHIP

Year	Average Daily Ridership
1998	~28,000
2000	~35,000
2002	~25,000
2004	~32,000
2006	~38,000
2008	~35,000
2010	~45,000
2012	~60,000
2014	~65,000
2016	~68,000
2018	~68,000

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At Capacity Today



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



Aging Fleet

Table 1.2: Caltrain Fleet Inventory

SERIES	QUANTITY	NUMBER OF SEATS	YEAR OF MANUFACTURE	MAKE	RETIRE DATE
Locomotives					
F40 PH-2	5	na	1985	GM - EMD	2015
F40PH-2-CAT	15	na	1985-1987	GM - EMD	2015-2017
F40 PH-2C	3	na	1998	Boise Locomotive	2026
MP36PH-3C	6	na	2003	Motive Power	2033
Passenger Cars					
Gallery Trailer	26	142	1985-1987	Nippon Sharyo	2015-2017
Gallery Trailer	16	148	1985-1987	Nippon Sharyo	2015-2017
Gallery Trailer	14	120	1999-2000	Nippon Sharyo	2030
Gallery Cab (Bike)	10	108	1985-1987	Nippon Sharyo	2015-2017
Gallery Cab (Bike)	6	78	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	9	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	2002	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

Area	Project	Service
51 miles San Francisco to San Jose (Tamien Station)	Electrification: <ul style="list-style-type: none"> • Overhead Contact System (OCS) • Traction Power Facilities Electric Trains <ul style="list-style-type: none"> • 75 percent of fleet 	Up to 79 mph Service Increase <ul style="list-style-type: none"> • 6 trains / hour / direction • More station stops / reduced travel time • Restore Atherton & Broadway service Mixed-fleet service (interim period) Continue tenant service <ul style="list-style-type: none"> • ACE, Capitol Corridor, Amtrak, Freight





Service Benefits

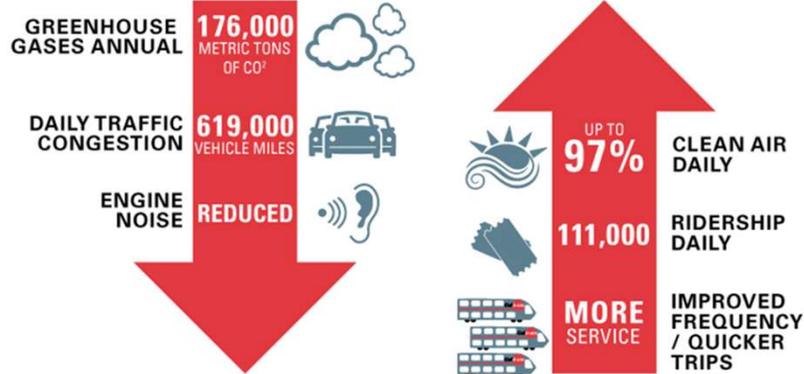
Metric	Today	PCEP
Example Baby Bullet Train		
Retain 5-6 stops	60 minutes	45 minutes
Retain SF to SJ 60 minutes	6 stops	13 stops
Example Redwood City Station		
Train stops / peak hour	3	5



Note: Prototypical Train and Schedule



Key Regional Benefits (2040)



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





Schedule

MILESTONES



*Please keep in mind that testing and construction will overlap as each Segment will be tested individually, prior to final system testing.

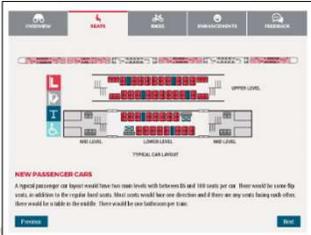


Note: Schedule Subject to Change




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
- 2019 Virtual Reality 360 Tour



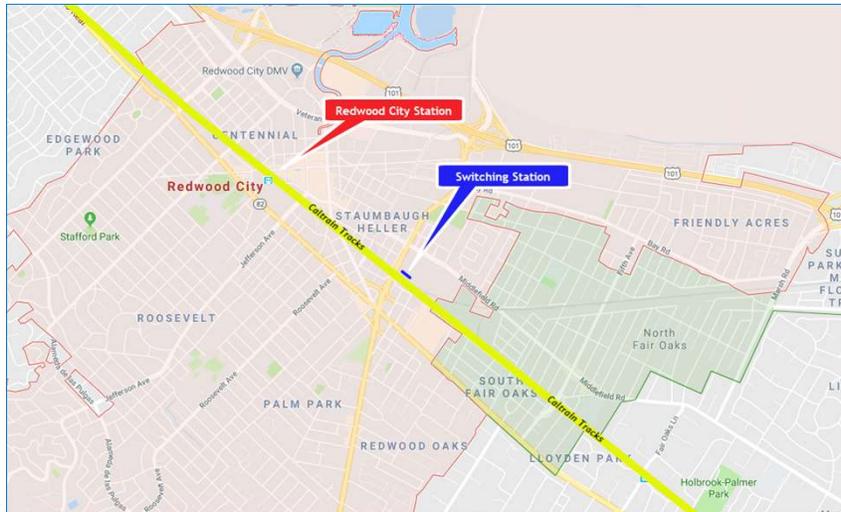



CalMod Construction Phasing

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



CalMod Redwood City and North Fair Oaks



Redwood City & North Fair Oaks Project Area 2.8 miles



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Field Work Progression

Work Completed	<ul style="list-style-type: none"> • Utility Survey • Geotechnical Investigations • Disposal of Soil from Geotechnical Investigations • Soil Resistivity Testing • Site Surveys • Signal Cable Inspections • Tree Pruning/Removal
Work In Progress	<ul style="list-style-type: none"> • Potholing • Foundation Installation
Future Work	<ul style="list-style-type: none"> • Pole Installation • Wire Installation • Switching Station Construction

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Future Construction Activities

Date	Work Activity	Expected Duration*
In Progress	Potholing	2-3 months
In Progress	Foundation Construction	3-4 months
Late 2018	Pole Installation	2-3 months
Spring 2019	Wire Installation	2-3 months
Early 2019	Switching Station Construction	9-12 months



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

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Foundation Installation



On Track Equipment

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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

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Pole Types Redwood City



Single Track Cantilever



Two-Track Cantilever



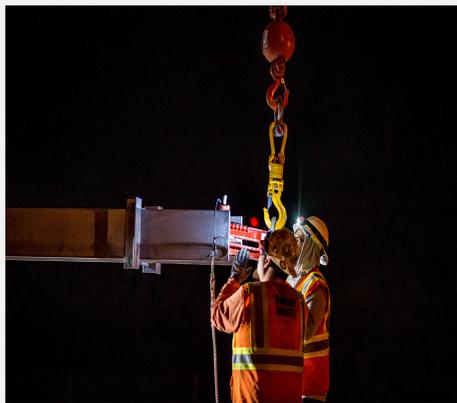
Portals



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



Pole Installation



Current Pole Installation



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Stringing Wire



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

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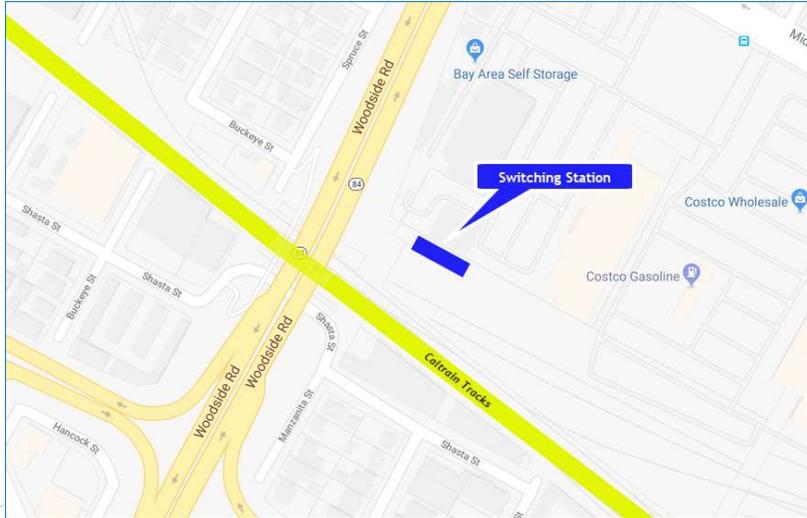
Traction Power Facilities

- 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

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Switching Station Location



Caltrain Track Materials Yard south of Woodside Road



Switching Station Details



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Example Switching/Parallel Stations



Examples from Amtrak Northeast Corridor

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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



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San Francisco Tunnel Work

- Within the four San Francisco Tunnels:
 - Overhead Contact System Installation
 - Grouting and Notching
 - Drainage and Track Work

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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

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