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CALTRAIN ELECTRIFICATION UPDATE

Palo Alto Community Meeting
June 4, 2019



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AGENDA

- Caltrain System Overview
- Project Overview
- Electric Train Design
- Palo Alto Construction Activities
- Questions

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CALTRAIN SYSTEM

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

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RIDERSHIP

Year	Average Daily Ridership
1998	28,000
1999	27,000
2000	35,000
2001	28,000
2002	26,000
2003	27,000
2004	30,000
2005	32,000
2006	35,000
2007	38,000
2008	36,000
2009	40,000
2010	45,000
2011	50,000
2012	55,000
2013	60,000
2014	63,000
2015	65,000
2016	66,000
2017	67,000
2018	68,000

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AT CAPACITY TODAY



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

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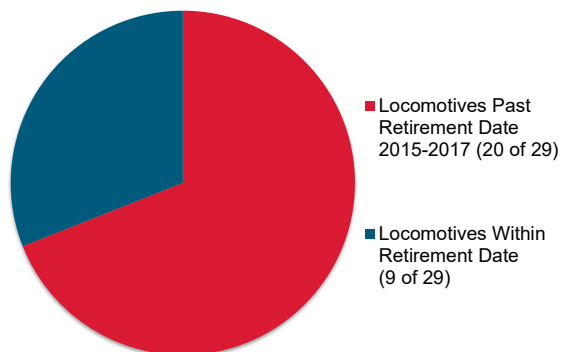


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AGING FLEET

Locomotives



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CORRIDOR SUPPORTS GROWING ECONOMY

- The corridor is the #3 most congested area in the U.S.
- US 101 and Interstate 280 congested
- 75% Caltrain riders commute to work
- 60% are choice riders
- Organizations shown represent Caltrain Commuter Coalition (P3)

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PROJECT DESCRIPTION

Project Area

- 51 miles
- San Francisco to San Jose (Tamien Station)

Project Elements

Electrification

- Overhead Contact System (OCS)
- Traction Power Facilities

Electric Trains*

- 19 7-car train sets
- 133 electric cars

*Includes 2018 State TIRCP Funding

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PROJECT DESCRIPTION

Service Elements




Speed

- 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

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SERVICE BENEFITS


Metric	Today	PCEP	Benefit
EXAMPLE: BABY BULLET TRAIN			
Retain 5-6 stops	60 minutes	45 minutes	15 minute savings
Retain SF to SJ 60 minutes	6 stops	13 stops	7 more stops
EXAMPLE: REDWOOD CITY STATION			
Train stops / peak hour	3	5	2 more stops

* Note: Prototypical Train and Schedule


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PROJECT BENEFITS




Improved Train Performance, Increased Service and Greater Capacity




Improved Regional Air Quality and Reduced Greenhouse Gas Emissions



Positive Economic Benefits for the Region




Reduced Engine Noise Emanating from Trains




Increased Revenue and Reduced Fuel Cost

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SCHEDULE

Caltrain strategic plan makes electrification a priority

*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

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ELECTRIC TRAIN

- **2016** Capacity Board Decision (bike to seat ratio, onboard bathrooms, upper doors 'not precluded')
- **2017** Design Finalized with Additional Public Input (exterior design, seat colors, bike storage, ADA restroom)
- **2019** Virtual Reality 360 Tour



FEEDBACK COLLECTION PROCESS



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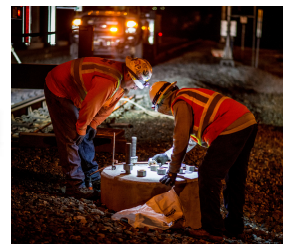
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CONSTRUCTION PHASING



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



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PALO ALTO

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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
Work In Progress	<ul style="list-style-type: none"> • Tree Pruning/Removal • Potholing
Future Work	<ul style="list-style-type: none"> • Foundation Installation • Pole Installation • Wire Installation • Paralleling Station Construction • Bridge Barrier Construction

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FUTURE CONSTRUCTION

Palo Alto

Date	Work Activity	Expected Duration*
In Progress	Tree Pruning/Removal	2-3 months
In Progress	Potholing	2-3 months
Summer/Fall 2019	Paralleling Station Construction	6-8 months
Summer/Fall 2019	Foundation Installation	2-3 months
Late 2019	Pole/Wire Installation	4-5 months
Fall 2019	Bridge Barrier Installation	2-3 months

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



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POTHOLING



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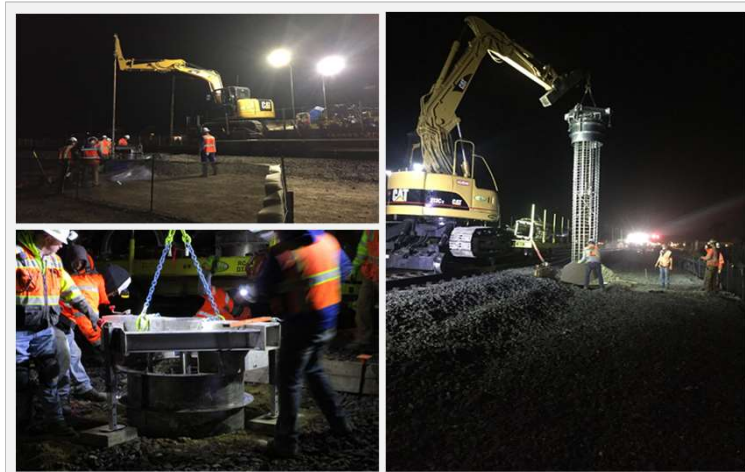
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FOUNDATION CONSTRUCTION

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

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FOUNDATION INSTALLATION



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POLE INFORMATION

- 3,000 Installed throughout Corridor
 - Approx. 196 poles in Palo Alto
- Pole Height: 30-50'
- Pole Spacing: ~180' apart

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POLE TYPES PALO ALTO



Single Track Cantilever



Two Track Cantilever



Center

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Example of Poles Planned for Use in Palo Alto



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POLE INSTALLATION



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Current Pole Installation



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STRINGING WIRE



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On-track Equipment



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TRACTION POWER FACILITIES

- 10 Traction Power Facilities Installed throughout Corridor
 - 1 Paralleling Station installed in Palo Alto
 - 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

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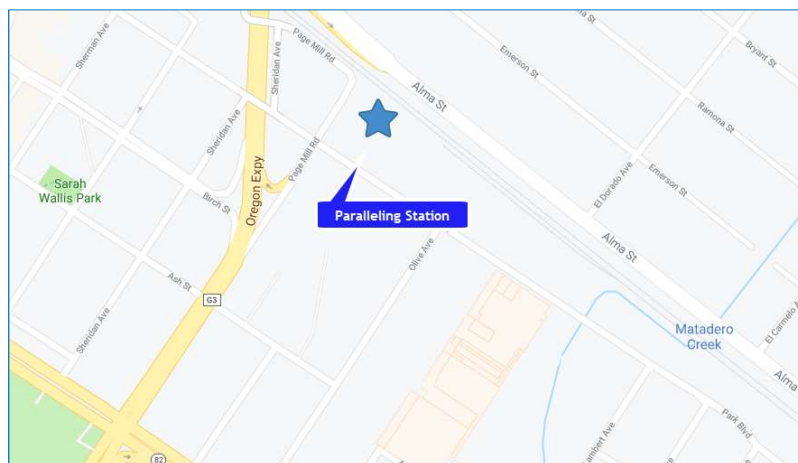
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PARALLELING STATION LOCATION



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Located south of Page Mill Road on Caltrain Property



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PARALLELING STATION



* Note: Location subject to change

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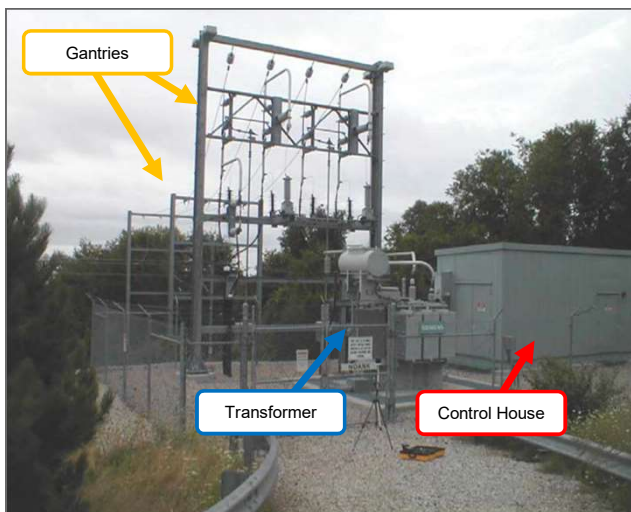
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EXAMPLE PARALLELING STATION



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Example from Amtrak Northeast Corridor



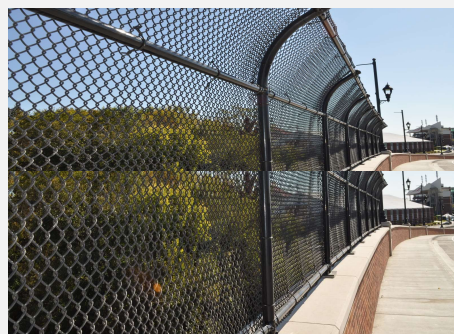
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BRIDGE BARRIERS

- Ensure the safety of pedestrians and electrical infrastructure
- Will be installed at:
 - San Antonio Road

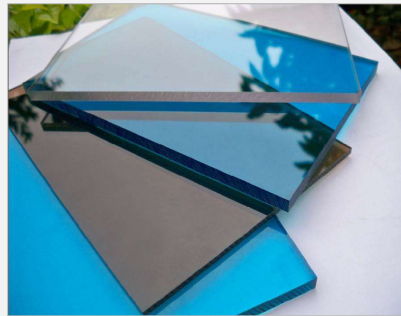
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BRIDGE BARRIERS




Screen Mesh

Polycarbonate Panel




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CONSTRUCTION INFORMATION


- 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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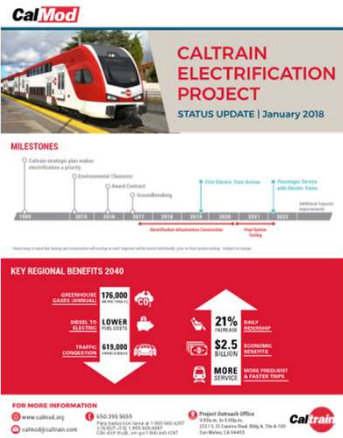
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PUBLIC OUTREACH



Doorhanger




Factsheet



Public Meeting

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PUBLIC OUTREACH

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

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WHAT'S NEXT

- Caltrain Business Plan
 - Caltrain2040.org
- High-Speed Rail Blended System
 - hsr.ca.gov
- Caltrain Downtown Extension
 - sftca.org/transbay-transit-center
- Diridon Concept Plan
 - DiridonSJ.org

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WEEKLY UPDATES  CalMod.org/get-involved

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