



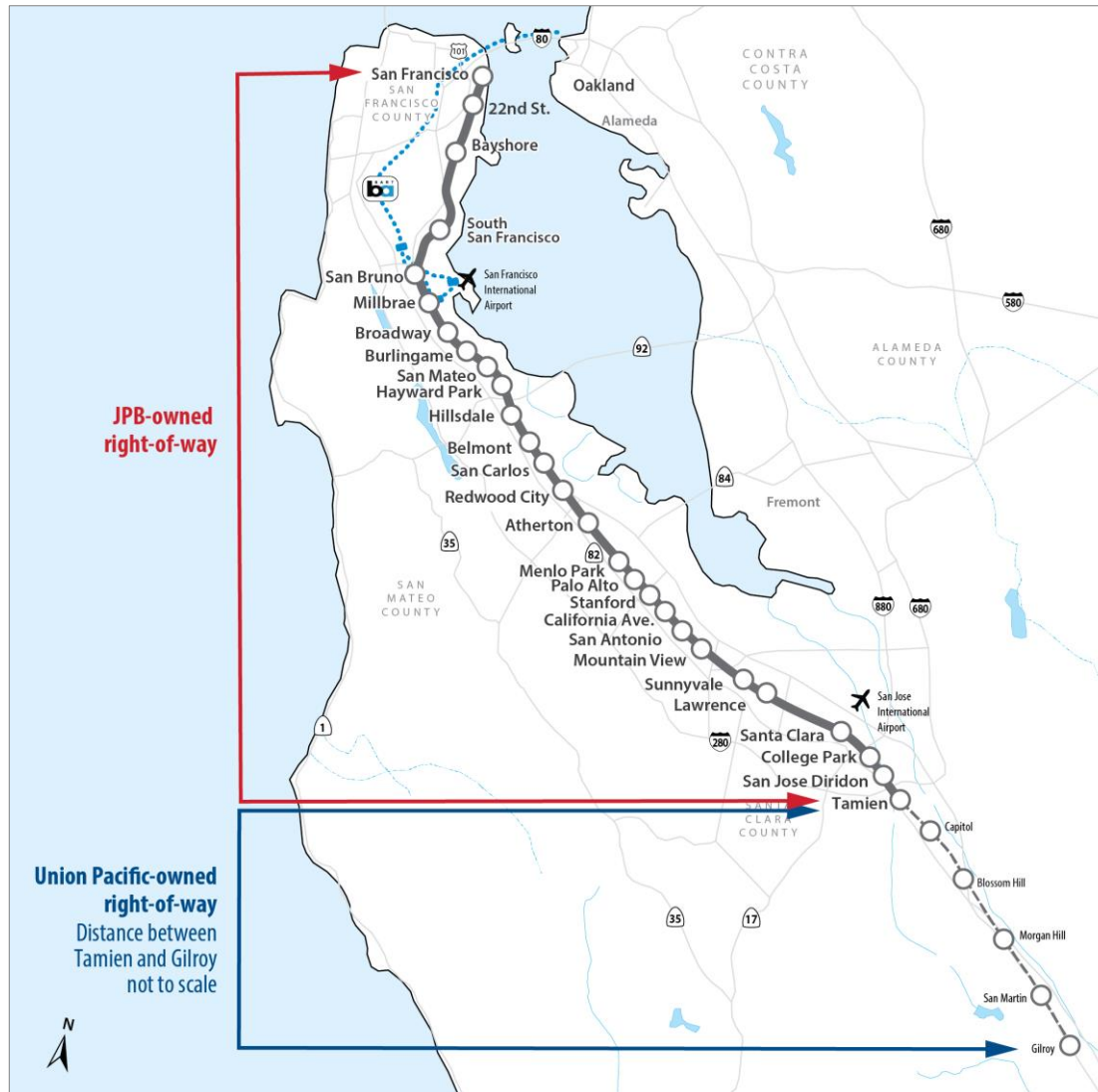
## CALTRAIN ELECTRIFICATION UPDATE

San Francisco Mission Bay CAC meeting  
September 12, 2019

# AGENDA

- Caltrain System Overview
- Project Overview
- Electric Train Design
- San Francisco Construction Activities
- Questions

# CALTRAIN SYSTEM



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

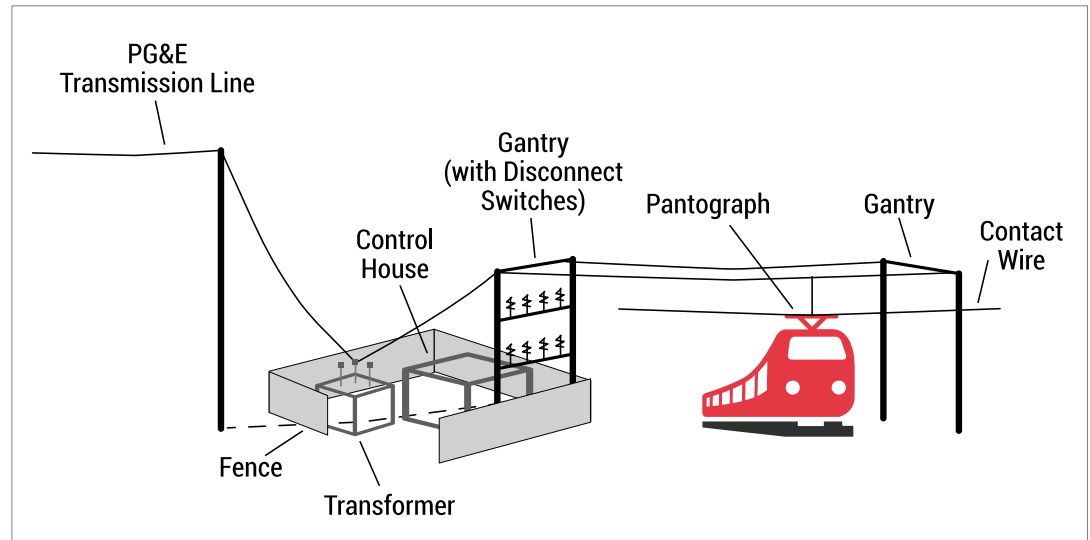
# PROJECT DESCRIPTION

## 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

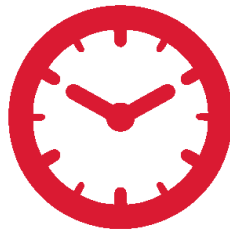
# PROJECT DESCRIPTION

## 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

# 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**

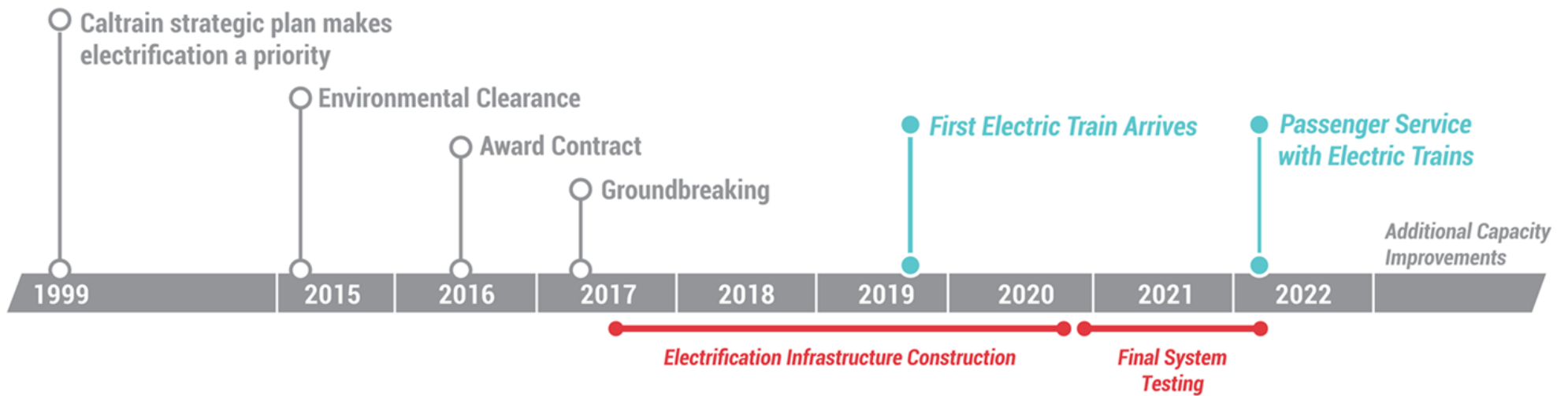


**Increased Revenue and Reduced Fuel Cost**



# 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 Finalized with Additional Public Input (exterior design, seat colors, bike storage, ADA restroom)
- **2019** Virtual Reality 360 Tour



## FEEDBACK COLLECTION PROCESS



+ BICYCLE ADVISORY COMMITTEE (BAC)

+ BIKE COALITION INPUT

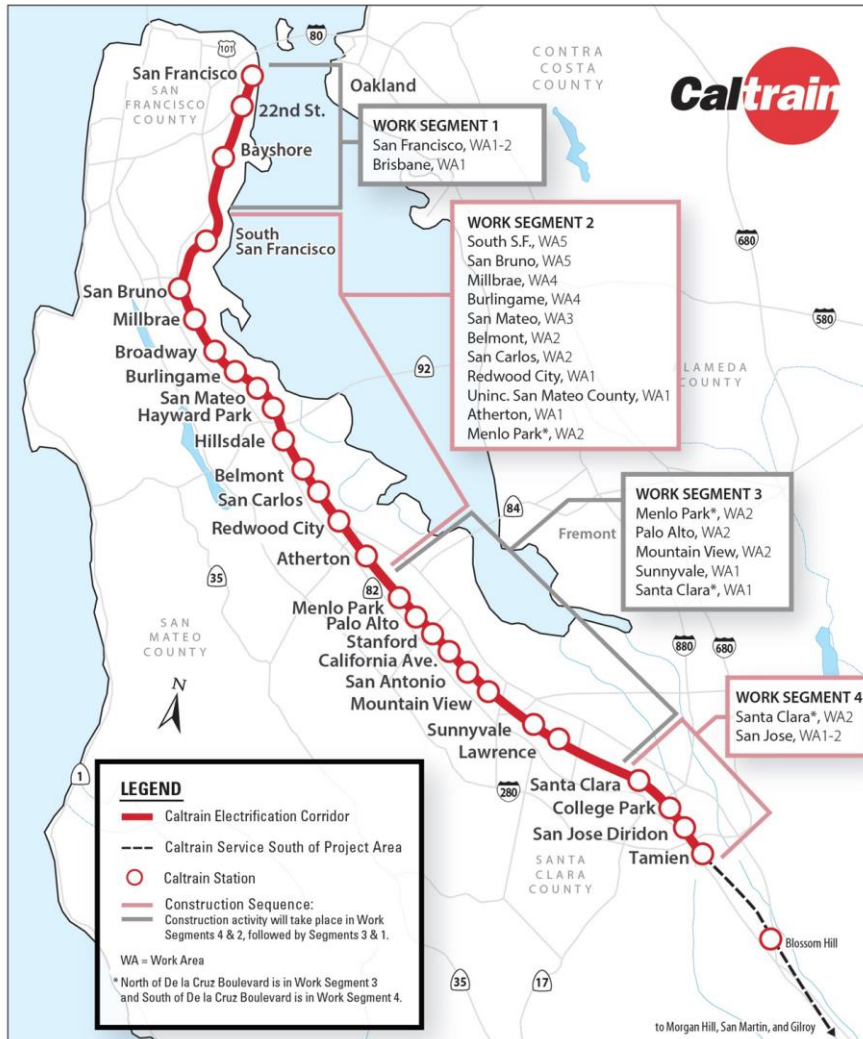
+ ONLINE BIKE POLL

+ STATION OUTREACH

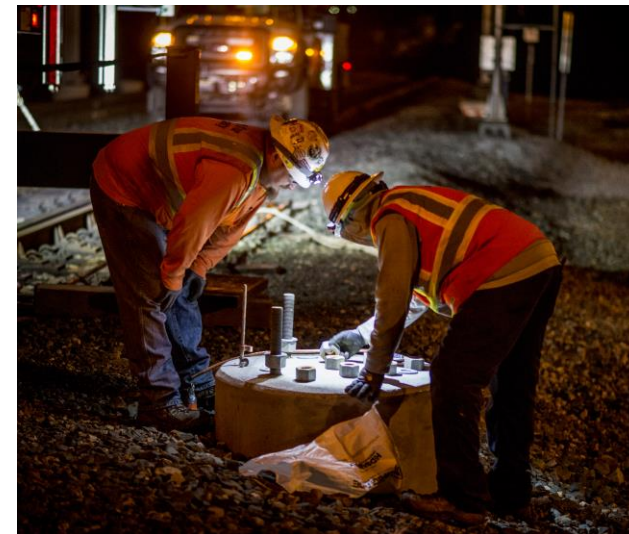
+ RIDER COMMENTS



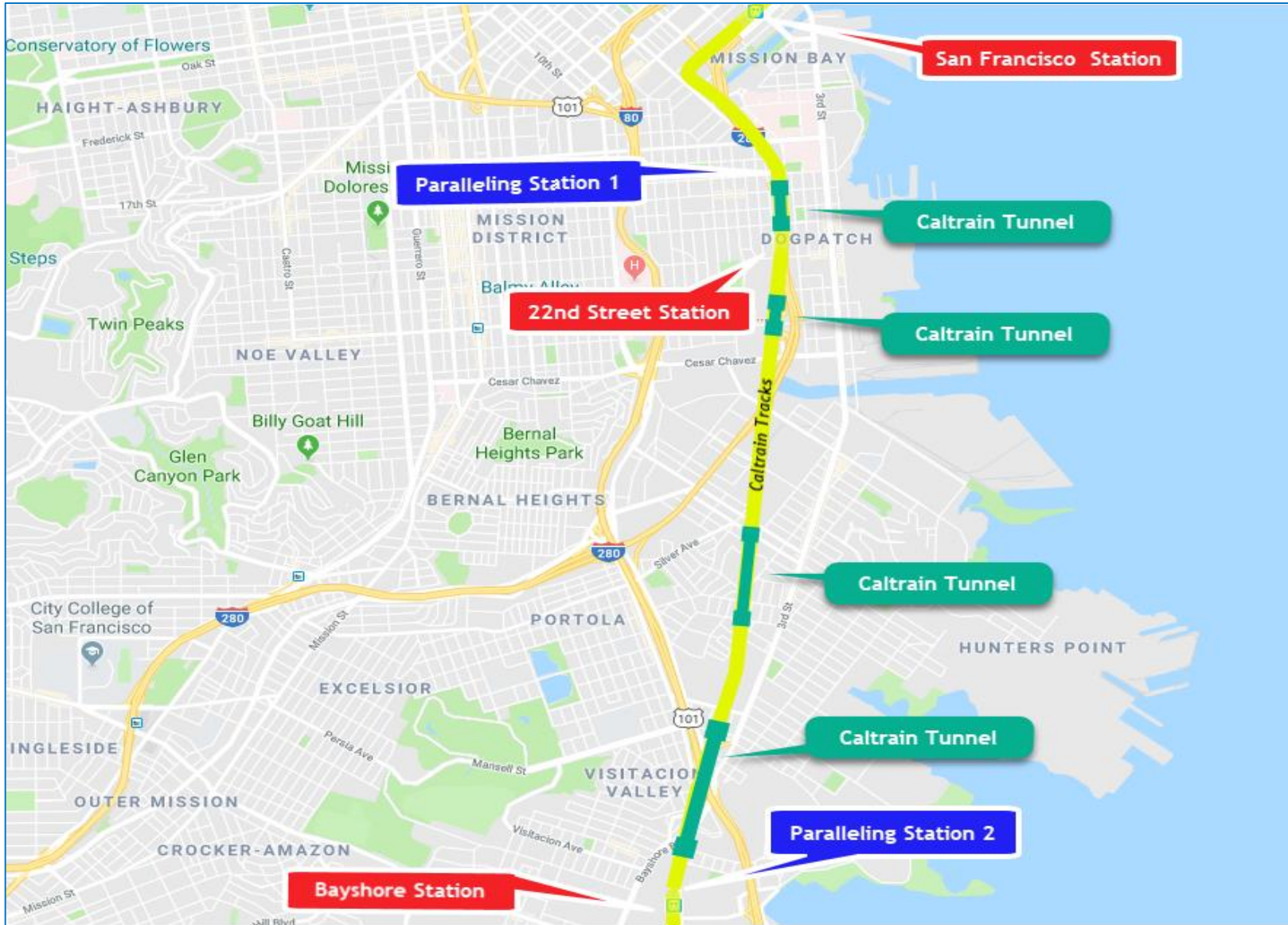
# CONSTRUCTION PHASING



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



# SAN FRANCISCO



# FIELD WORK PROGRESSION

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

# FUTURE CONSTRUCTION

## San Francisco

Date	Work Activity	Expected Duration*
In Progress	Tree Pruning/Removal	3-6 months
In Progress	Potholing	3-6 months
In Progress	Tunnel Work	9-12 months
Early 2020	Foundation Construction	2-3 months
Summer 2020	Pole/Wire Installation	4-5 months
Fall 2019	Paralleling Station Construction	4-6 months



# POTHOLING



## SAN FRANCISCO TUNNEL WORK

- Work on the four San Francisco Tunnels:
  - Overhead Contact System Installation
  - Grouting and Notching
  - Drainage and Track Work
- September 2018 through Summer 2020
- 24 hour weekend work
- Additional weekend shutdowns may be needed



# FOUNDATION CONSTRUCTION

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

# FOUNDATION INSTALLATION



## POLE INFORMATION

- 3,000 Installed throughout Corridor
  - Approx. 300 poles in San Francisco
- Pole Height: 30-50'
- Pole Spacing: ~180' apart

# POLE TYPES SAN FRANCISCO



Single Track Cantilever



Two Track Cantilever



Center



# POLE TYPES SAN FRANCISCO

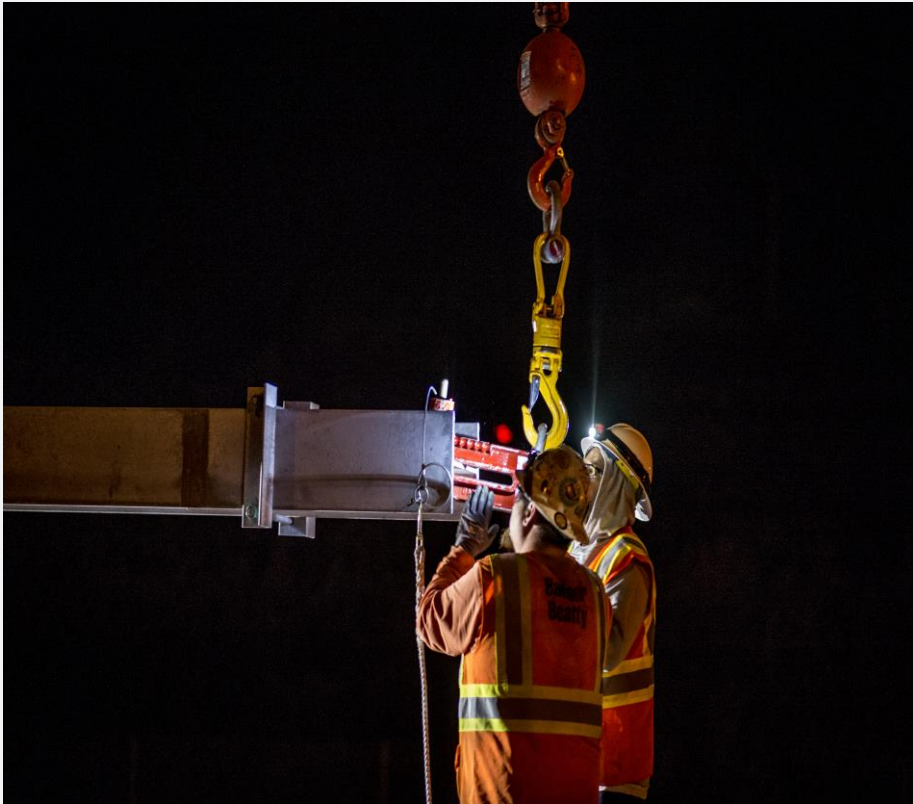


Portal



Headspan

# POLE INSTALLATION





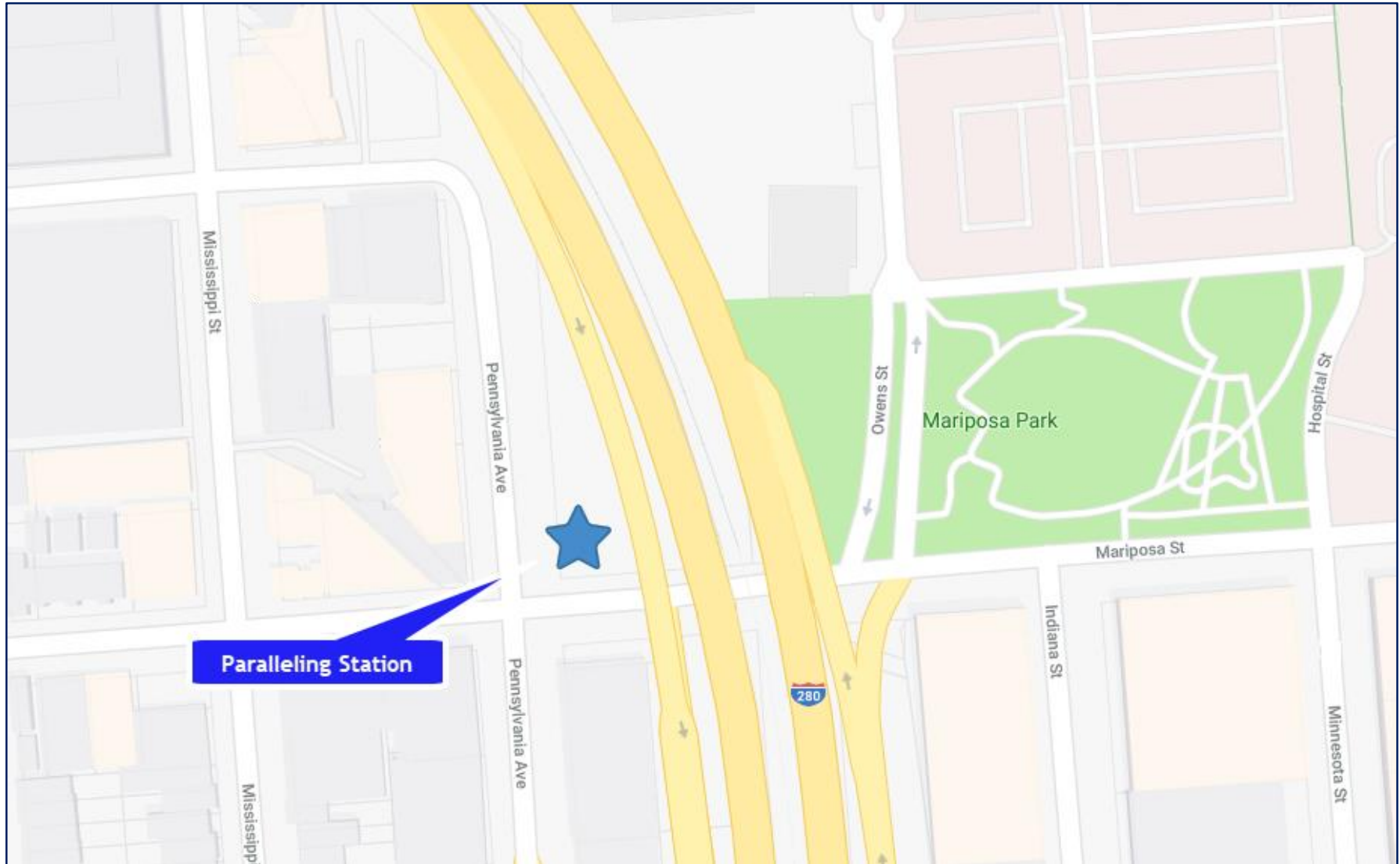
# STRINGING WIRE



# TRACTION POWER FACILITIES

- 10 Traction Power Facilities Installed throughout Corridor
  - 2 Paralleling Stations installed in San Francisco
  - 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

# PARALLELING STATION-1 LOCATION

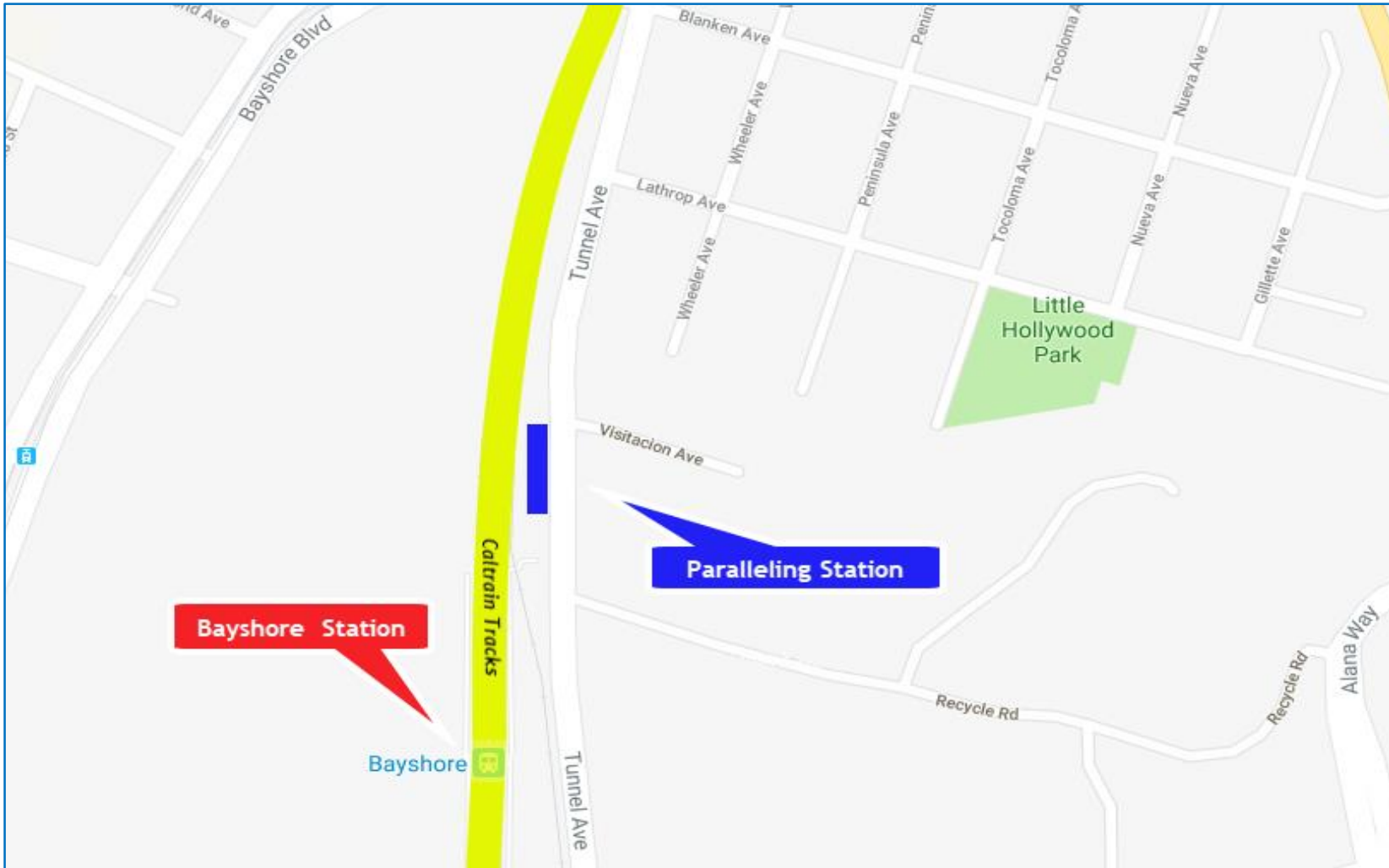




# PARALLELING STATION-1



# PARALLELING STATION-2 LOCATION





# EXAMPLE PARALLELING STATIONS





# 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

# PUBLIC OUTREACH

**CalMod**

**CALTRAIN MODERNIZATION PROGRAM**  
Test Pile Construction Activities

**DAY TIME WORK**  
**08/28/17 - 09/1/17**

**ANTICIPATED WORK HOURS**  
7:00 a.m. - 5:00 p.m.

**CREWS CONDUCTING WORK IN YOUR AREA TO INSTALL AND TEST FOUNDATION PILES**

During the week of August 28, Caltrain electrification crews will be working in your area to construct one test pile foundation for integrity testing. The piles will be installed within the Caltrain right-of-way.

Crews will be conducting the work over a two day period between Monday, August 28 and Friday, September 1, between the hours of 7 a.m. and 5 p.m. Crews will return at a later date to test the integrity of the installed piles.

**Main construction activities include:**

- Survey and layout of proposed pile test location
- Trucks and equipment working near Caltrain right of way
- Drill holes for placement of test piles
- Pour concrete and install rebar
- Backfill holes to cover work areas

We apologize for any inconvenience this may cause. The field team will work as quietly as possible. Thank you for your patience and understanding as we deliver these critical benefits to our communities.

Please visit our website at [www.caltrain.com/PCPEconstruction](http://www.caltrain.com/PCPEconstruction) to sign-up for weekly construction updates.

**We appreciate your patience during construction.**

Doorhanger

**CalMod**

**CALTRAIN ELECTRIFICATION PROJECT**  
STATUS UPDATE | January 2018

**MILESTONES**

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

**KEY REGIONAL BENEFITS 2040**

- GREENHOUSE GASES (ANNUAL)** 176,000 METRIC TONS CO<sub>2</sub>
- DIESEL TO ELECTRIC** LOWER FUEL COSTS
- TRAFFIC CONGESTION** 619,000 VEHICLE MILES
- 21% INCREASE** DAILY RIDERSHIP
- \$2.5 BILLION** ECONOMIC BENEFITS
- MORE SERVICE** MORE FREQUENT & FASTER TRIPS

**FOR MORE INFORMATION**

- [www.calmod.org](http://www.calmod.org)
- 650.399.9659
- Para traducción lláma al 1.800.660.4287
- 查詢詳情請電: 1.800.660.4287
- Cần dịch thuật, xin gọi 1.800.660.4287
- Project Outreach Office: 9:00a.m. to 5:00p.m., 2121 S. El Camino Real, Bldg A, Ste A-100, San Mateo, CA 94403

Factsheet

**CALTRAIN MODERNIZATION**

- IMPROVING CONVENIENCE**  
An electrified system means the trains can run more frequently and more efficiently.
- BOOSTING ECONOMIES**  
CalMod will also provide economic benefits, including creating nearly 10,000 jobs across the country.
- INCREASING CAPACITY**  
CalMod upgrades give us room to grow, initially increasing capacity by over 30%.
- ADVANCING SUSTAINABILITY**  
Replacing old diesel trains with new electric trains will reduce GHG and improve air quality.

These are just a few examples of how Caltrain and the CalMod program are innovating to better serve the Bay Area. Learn more at [CalMod.org](http://CalMod.org) and stay in touch with us on social media!

**CALTRAIN**

Postcard



Public Meeting

## PUBLIC OUTREACH

- Subscribe to Weekly Updates
  - Visit [www.calmod.org/get-involved](http://www.calmod.org/get-involved)
- Social Media
- Construction Outreach Office
- Additional Community Meetings
  - Pole Installation


# WHAT'S NEXT


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

## CALMOD CONTACT INFORMATION

**WEEKLY UPDATES**  CalMod.org/get-involved

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**FACEBOOK**  www.facebook.com/caltrain

**TWITTER**  @caltrain